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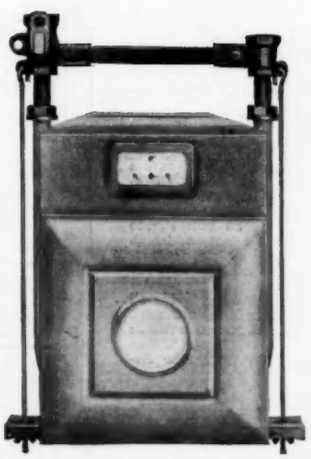

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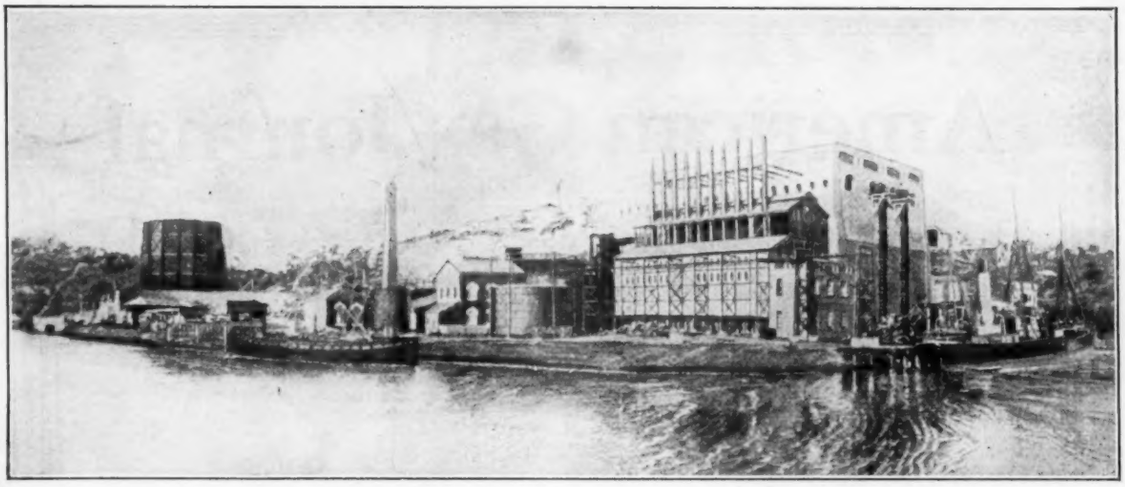

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American Gas Journal

SIXTY-FIFTH YEAR

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Making Partners of Customers in Colorado

How 17,000 shares were sold in a ten-day campaign

George W. Bixler

Customer ownership is an important movement in the public utility field. It has been gaining great headway in the last year or two, due no doubt to the fact that in it public utilities have recognized their surest and most effective weapon to combat government ownership and control.

The article that follows tells about a very remarkable campaign to enlist customers of a public utility as stockholders of the company. The fact that the goal of the customer ownership campaign was attained in the amazingly short period of ten days is not the least of the accomplishments.

How this was done is described below. All the details are given. There is plenty food for thought in this paper for the gas company that is endeavoring to sell its securities to its customers.—Editor.

A MOST successful customer ownership campaign was run in 1923 by the Public Service Company of Colorado, one of the principal public utility subsidiaries of Cities Service Company. In a brief ten-day campaign the personnel of the company, which serves Denver, Boulder, Fort Collins and other Colorado cities and towns with light, heat and power, sold 17,000 shares of the company's 7 per cent preferred stock to 5,700 customers.

The astonishing success of this single ten-day campaign to persuade public service customers to become partners in and share the profits of the company serving them is apparent, when comparison is made with official records of similar work done by other companies. One out of every fourteen customers of the Public Service Company of Colorado is now a stockholder, a proportion of 7 1-7 per cent.

In 1923 the customer ownership committee of the National Electric Light Association reported that all companies heard from showed 5½ per cent of their customers as stockholders. This was accomplished after several years of intensive customer-ownership work had been done.

Company Officials and Employees Sold Stock

The sale of preferred stock was conducted solely by officers and employees of the company, few of whom had any previous experience. Taking this circumstance into consideration, together with length of campaign and population of territory served, and the further fact that Public Service Company of Colorado had been operating as such only little more than a month, there is every reason to believe that the campaign set a record for the country.

The response to the invitation to customers to share in the ownership of the company through the purchase of its preferred stock exceeded the hopes of company officials. At the same time it dispelled an illusion that money was scarce, and demonstrated beyond question that assurance of safety and reasonable return on the investment are all that is necessary to open the purse of investors. It is interesting, in this connection, to note that 3,070 of the 16,593 shares were sold for cash.

Generous Response Throughout Entire Territory

The response to the company's offer was generous throughout its entire territory, a territory 100 miles long and nearly half as wide, extending from Denver north to and across the Wyoming line to Cheyenne. The attitude of the public toward the security offered was perhaps nowhere better illustrated than in Cheyenne, where the Public Service Company of Colorado operates through a subsidiary, the Cheyenne Light, Fuel and Power Company. Difference in name or local pride did not affect the business judgment of Cheyenne customers. Seventeen per cent of all Cheyenne customers bought the preferred stock of the Colorado Company—which is some start in the way of customer ownership.

A security offering a liberal return to investors, backed up by a company enjoying the public's confidence, plus organization, enthusiasm and intelligently planned publicity—is what brought nearly 6,000 new customer-owners to the Public Service Company of Colorado in the first really comprehensive campaign of the kind in this part of the country.

Publicity Work an Important Factor in Campaign

The efficient publicity and advertising carried on was conceded by all to be a large factor in securing such wonderful results, a goodly number of checks being received through the mail from customers before the employees had time to call on them. Additional interest was stimulated amongst the employees through a specially issued "Daily News," which was edited by the publicity department. This diminutive daily contributed much interest to the competition among departments, since the widespread publication of last, up-to-the-minute results among the employees made leading individuals and teams strive to retain first place. Interesting stories of luck and misfortune were brought to light. In several departments the "Daily News" was read early in the morning as a spur to greater achievement throughout the coming day.

Sales Organization Perfected First

The organization of the sales machinery in the various departments of the Public Service Company of Colorado was begun two weeks prior to the opening of the campaign, although the first definite step towards arousing public interest was taken on November 5, when full-page advertisements appeared in all daily newspapers in the territory served by the company, followed by full-page advertisements in the newspapers of November 6 and 7.

The first advertisement aimed at "selling the company" to the public. The next "sold" the idea of public utility securities as an attractive investment, and the third presented the idea of investing at home, in this case in one's home utility. Each ad. led up to the announcement that every customer of the company would receive a letter containing information of interest to him on November 8.

Series of Letters Issued

The letter of November 8, printed in two colors and effectively illustrated, presented to each customer the opportunity to buy the 7 per cent preferred stock of the Public Service Company of Colorado at $93.50, the price at which it was offered during the campaign, and at which figure it yielded a return of practically 7½ per cent on the investment.

A second letter, or special mailing piece, dealing with the specific facts as to the desirability of Public Service Company preferred stock as an investment and announcing that an employee of the company would call on the recipient of the missive, was sent out November 9. Instead of going to all customers, as did the first letter, it went only to those customers who, as a part of the sales campaign, had been designated by employees as prospective purchasers of stock.

Preliminary to the campaign, "pep" meetings were held for employees in the various departments of the company in Denver and in the different cities and towns of the Western Division, which was the Western Light & Power Company territory and embraces northern Colorado and Cheyenne, Wyoming. These meetings were presided over by general officials of the company or department heads.

Rally and Dinner Final Preparatory Step

A rally and dinner by Chapter No. 1, Doherty Men's Fraternity, in Denver, the night before the campaign opened, was the final number on the program of preparations. The Doherty Men's Fraternity is an organization of men employed by properties owned, controlled and operated by Henry L. Doherty. The Fraternity has for its purpose the perpetuation of the business principles and ideals of Mr. Doherty. Nearly 1,000 members of the Denver organizations were present at the dinner, which was presided over by V. L. Board, president of Chapter No. 1. The following week the women and girls of the organization had a "pep" dinner that lacked nothing in the way of enthusiasm.

The Selling Plan

The selling plan was simple. Each employee was asked to turn in the names of at least ten friends or acquaintances upon whom he or she would call during the ten days of the campaign and tell ten points about the company and its preferred stock. The customers whose names were thus designated as prospects received the special mailing card announcing that an employee would call. In a majority of cases, however, employees turned in more than ten names, and eventually made many more calls than those originally designated.

Stock was sold for cash and on a deferred payment plan of $10 per share at the time the order was given and $10 per month per share until paid. The deferred payment plan proved an attractive offer to a great many people. Many adopted it as a savings medium. Under this plan the stock was issued at once in the name of the purchaser, but to be held by the company, with power of attorney, until payments are completed. Purchasers on the deferred payment plan received the November dividend and are receiving regular monthly dividends while they are paying for their stock, the same as those who paid cash. On their final payment they will also pay the interest that has accrued on the unpaid balance month by month. This interest rate is 6 per cent, but since Public Service Company preferred stock pays 7 per cent on par of $100 per share, it will be seen that the difference is in favor of the stockholder.

(Continued on Page 326)

What We are Doing in Illinois to Promote Industrial Gas Sales*

Educational work to develop industrial men—Important innovation of People's Gas Company

Frank F. Cauley

Manager, Industrial Department, the Peoples Gas Light & Coke Company, Chicago, Ill.

WE ARE all interested in promoting and increasing our gas sales. And if we will stop for a moment and seriously consider the great opportunity for extending the use of gas for industrial purposes we will be agreeably surprised, and while managers of gas properties in the towns and cities of Illinois have increased their activities along these lines during the last few years, I firmly believe there is still a vast amount of revenue which can be secured from the manufacturing industries.

It seems to me that in order that we may have a clear understanding of this subject, we might use a sub-heading and call it the "Industrial Gas Business," and then add the following questions:

(1) What is it?
(2) Where is it?
(3) How to get it?

What Is Industrial Gas Business?

In answering the first question, some commercial men say they have either secured all the industrial business or there is no industrial business in their town, and while this statement might be true, I have investigated a number of cases where these answers were given and it developed that the commercial men did not have a very wide vision of what industrial business really was. We consider the industrial gas business is any manufacturing plant that uses 50,000 cubic feet of gas per month and over, and we believe any manufacturer a live prospect, no matter what fuel he is using for his heating operation.

In answering the second question, we believe there is some industrial business in every town and city of any size in the United States.

Answering the third question as to "How to Get It," I want to state right here that you must first make up your mind that you actually want the business, second that you are "sold" on the fact that the heating operation can be done better with gas, and third that well-directed and concentrated efforts will go a long way towards securing the business.

Lack of Proper Publicity a Retarding Influence

We believe the one thing which has retarded the industrial gas business is the lack of publicity, as to what has been accomplished with gas in the industries and with that thought in mind our company has attempted to give as wide publicity to the progress of this work as possible. Our advertising and publicity work consists of:

Newspaper advertising.
Trade publication advertising.
Articles in trade journals.
Articles in commercial journals.
House organ (People's Gas Club News).
Ad. on back of gas bill (monthly).
Ads. in trade organization year books.
Ads. in Association of Commerce Year Book.
Industrial gas information in year book to company's stockholders.
Ads. on billboards, fences, gas holders, and company's property.
Ads. on elevated platforms, etc.

Photographs are taken of all new industrial gas installations. These photographs are generously distributed among our customers by our sales force. They are also sent to trade journals and broadcasted through trade magazines. Permission is always secured from the customer before photographing or publishing photographs taken of their heating operations.

Right Contact With Prospective Customers

We are strong believers in getting the right contact with our prospective customers. This contact is extended to trade organizations and engineering clubs, which gives them an acquaintance with the engineering profession and the industries, which is obtained in no other way. It has been our policy to give illustrated lectures with lantern slides to various trade organizations and thereby present our story of the new uses of gas for industrial heating operations.

Importance of Thorough Analysis of Working Conditions

I would like to impress upon you gentlemen who are interested in securing the industrial gas business, the necessity of having your sales engineers capitalize on a thorough analysis of the working conditions in the plants, for without this careful study the salesman will be unable to compete with the chief obstacle that he is brought face to face with, namely, low price fuel. In order to make myself thoroughly clear, I will quote a few cases.

A short time ago one of our sales engineers was negotiating to take over a large vitrous enameling plant on gas. The manager of the plant thought he

*Delivered at the annual meeting of the Illinois Gas Association.

had accurate cost of the coal and other expenses of operation and for that reason he stated the price of gas was entirely too high. Since this account would be worth between $50,000 and $60,000 a year, if we were successful in securing their gas business, we decided to put in a trial installation on the ground that this work could be done better and more economically with gas. At the end of the first month the fuel costs showed 53 cents per hour to operate their furnace with coal as against $1.18 per hour with gas. After several months of careful analyzing all of the costs with coal, which included power, labor, furnace maintenance, loss of production, overhead, miscellaneous and special expense, it was found that the hourly cost with coal was $4.94, while with gas it was $1.44 per hour. It is barely necessary to say what happened, for today there are eight gas enameling furnaces in their plant, gas being used exclusively.

What It Cost to Use the Fuel Is the Important Point

If time permitted, I could go on and cite any number of cases similar to the one given above. It simply means this, that a most careful analysis in every industrial heating operation should be made because it is not the cost of the fuel, but what it costs to use it.

The Relations With Appliance Makers

In the electrical industry we find several great institutions such as the General Electric Company, which have carried on the necessary experimental work in connection with the development of heating appliances for the utilization of electric current, and have standardized the equipment which the electric sales engineer uses as tools in his efforts to secure a large output for his company.

Such organizations do not exist in the gas industry, but there are no reasons why they should not exist and on that account the policies of the industrial department of our company are being shaped in a manner that will encourage the manufacturer of industrial appliances to take his rightful place in the industry.

Our industrial department is being developed solely as a gas sales organization. They are being equipped with the information needed and are being trained in the idea that their business is to sell the industrial gas proposition. While these men are technically trained, and while many of them have had previous experience in the design and installation of gas furnaces, they are now leaving the details of that work to the engineers of the appliance manufacturers.

Good Results Expected from Them

This plan is bound to work out to the mutual advantage of manufacturers and gas companies ultimately, for the following reasons:

1. The manufacturer is being relieved of the burden of selling his product, and is consequently free to put all of his energies into the work of developing new and more efficient appliances. He is being strengthened in his financial position so that in the future he will be able to make greater contributions to the industry.
2. The industrial prospect is being taught to purchase gas equipment instead of using makeshift appliances built in his own shop. He is also reaping the benefits of better utilization of gas, and improvement in product.
3. The gas company is getting into a position where it can choose for its sales engineers men who have the ability to present to its customers the advantages which accrue to the users of gas for industrial purposes, without the necessity of looking for men who combine the qualities of a designer, salesman, writer, erection engineer and diplomat.
4. New fields are being opened for the use of gas as a factory fuel, which will give the gas companies that great outlet for their product which must be secured if they are to function successfully in the future.

In building up an effective industrial sales organization, considerable time is necessary for the training and education of men for the industrial gas force.

The Personnel of the Industrial Department

It is highly important that every gas company exercise a great deal of care in the selection of the personnel of the industrial department. The men engaged in this highly specialized branch of their business must be primarily the type who will be able to command respect and attention from either the men in the shop or the president of the company. They must be familiar with and able to intelligently present every phase of the most effective utilization of gas and its application to the particular process under consideration, including mains, service, meters, interior piping, combustion systems, burners, furnaces, etc.

Where are we going to find such men? What are the available sources of supply, gentlemen? They don't exist. There are none; you've got to make your own.

It is only within the last year or so that any attempt has been made to give a course in gas engineering at any of the recognized universities, and so far the courses have been restricted to a great extent to manufacture and distribution.

The Educational Course of the People's Gas Co.

The industrial department of the People's Gas Company has adopted a general process of education along lines used in the electrical industry. It is not as thorough or as comprehensive as it probably will be within a year or so. We have, at the present time, from 15 to 20 cadet engineers who have been selected only after a very thorough examination of their possibilities. One or more of these engineers are assigned to a sales engineer and work with him in collecting data and conducting tests, and in making layouts for interior piping and simple layouts for furnace design. From time to time they are taken to see our various manufacturing plants and become fa-

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Gas—A Caged Wizard

A rapidly growing utility industry with potentialities that need encouragement—Gas as a coal saver

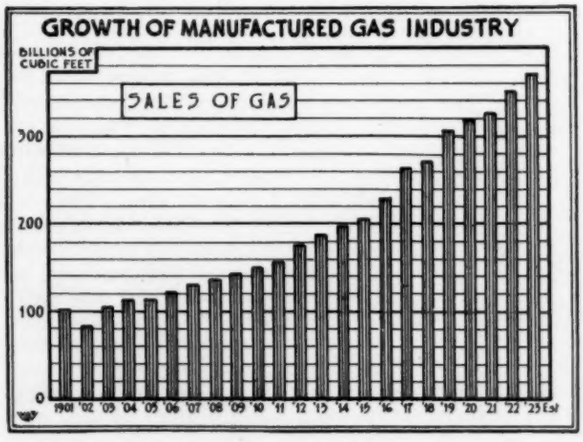
Burton L. Read

WITH equipment and appliance companies included, capital investment in the manufactured gas industry in the United States is not far from $4,000,000,000. Gas and coke-making are the only economical methods of using bituminous coal, which in raw burning yields only about 5 per cent of its potential energy and leaves in ashes or atmosphere enormously valuable by-products. Yet the bituminous coal used for gas and coke is not more than 4 per cent of the total supply. It is this situation, combined with the inevitable slowness of raising capital and the hampering tendency of most of the current heat standards, that suggests for gas making the description employed in the above title.

New Industry Created

It is necessary to keep in mind both the potentialities and the great expansion that the gas industry has already achieved along new lines of usefulness, to get in true perspective such recent occurrences as the overthrow of the 80-cent gas law in New York City, the action of the Colorado Public Utilities Commission in allowing a discretionary heating standard and the progress in certain western communities of the "three-part rate" for more equitably assessing gas costs on consumers.

The gas light has, in a certain respect, taken a back seat with the rise of electric lighting, but with-


GROWTH OF MANUFACTURED GAS INDUSTRY
BILLIONS OF CUBIC FEET
SALES OF GAS
300
200
100
0
1901 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 Est

in the last quarter-century the broadening use of gas as a fuel has practically created a new industry. Here is the record since 1900, in approximate figures of gas sold:

	Manufactured Gas (Cubic feet)	Natural Gas (Cubic feet)
1901	101,625,000,000	114,000,000,000
1922	350,000,000,000	763,000,000,000
1923	370,000,000,000 (Estimated)	

The High Spots in the Table

Three things are outstanding in this table: (1) the multiplied consumption of both manufactured and natural product, (2) the more rapid gain in natural gas, and (3) the present volume of natural as compared with manufactured. The contrast in the two types of product is still greater with allowance for some 30,000,000 cubic feet of natural gas mixed with manufactured and included with it in the above total.

In spite of the contrast in total output, manufactured gas supplies about 3½ times the number of consumers reached by the natural product. Natural gas is at best but a passing quantity, and the serious problems of the gas industry center about the manufactured article and its vital relation to coal-saving.

New Users Are Many

Of the present supply of the manufactured product, considerably less than one-fifth is used for lighting. More than half goes for cooking, water heating and sundry domestic purposes. Something like one-fourth serves industrial uses, with the ratio growing all the time.

Brass foundries and all types of metallurgical plants are among the great consumers, together with bakeries, candy manufacturers, laundries; a growing list as the gas salesman and the expert engineer join forces to displace coal.

"If it's done with heat, you can do it better with gas," is the slogan of the up-to-date company, urged with missionary zeal and backed with such telling arguments as economy, convenience and uniformity of cost from one year to another. Total output of gas about doubled in the last census decade, while its use for industrial purposes increased about 1,000 per cent. Today the rate of gain for industrial use is even greater.

House Heating a Future Problem

Ultimately such an expansion may extend also to house heating. In this field some interesting beginnings have been made, but most of the companies still hesitate, owing to the high peak load for a short season, without an offsetting demand in summer.

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GAS MERCHANDISING

Domestic – Industrial

Selling the Biggest Thing in the World

The Gas Company to succeed must sell its service

Lester G. Herbert

GAS, as we know it as a heating and lighting medium, is one of the important commodities which makes civilization and progress possible. No one needs to be harangued on the value or convenience of gas and the SERVICE which brings it to the people who want it night or day, year in and year out.

Yet the fact remains that people are often so taken up with their own affairs, and so accustomed to having the convenience of gas at all times, that they do not appreciate it, but, on the contrary, find a great deal of fault when there is any interruption in their SERVICE, whatever it may be. There are always those who find fault because they are built that way, and, when we come right down to it, is there not a deal of blame to be attached to those concerned in this great industry? Is there as much done as there might be to acquaint the public with the tremendous amount that is given in the way of investment, investigation, experience, watchfulness, and even unselfishness, which are inevitably involved in giving service with gas?

All Pay for Service

When you and I go out to buy a pair of shoes, we pay a relatively small amount for leather, and lining, and thread. What really counts the most in the bill we settle is the SERVICE of human beings all along the line, from the feeding of the cattle, the picking of the cotton and the planting of the flax to the moment that the clerk hands us the wrapped package and the change—if there is any coming back to us. SERVICE is the greatest thing in the world, and the grade of SERVICE delivered governs the quality and value of what we have to sell. SERVICE is often interpreted to mean those methods concerned in the final handling between the company and the user of the product. SERVICE means much more than this. It includes all the work and effort which go to make the business possible. It includes the tact and consideration with which the consumer is handled. It includes the follow-up work done for the safety of all concerned. It includes the price in dollars and cents at which the product is given to the public.

An Example of Results from Selling Service

One of the most prominent business men of the day declares that when he offers his patrons a fine suit of clothes at rock-bottom prices that he is rendering them a better SERVICE than if he refurnished his public rest room with elaborate and elegant furnishings. His idea is to give a maximum of value at a minimum of cost. And because this man actually follows this method out in his every-day business, he has risen to be one of the merchant princes of this nation and of the world.

His success is the logical outcome of the principle involved. He sells the greatest thing in the world—SERVICE.

SERVICE touches every department of his buying and selling. He aims to eliminate all cause for complaints, and in doing this he strives to have the public understand that his first and last ideas are to give them the best that their money can buy. Naturally, large business comes to him week in and week out, year in and year out, and the volume continues to increase.

A great hotel system has built up a marvelous success in the form of a chain of palatial houses of public accommodation on the same idea. The management has taken the public into its confidence, and by means of advertising and personal publicity, has shown that every department of the business and every employee must co-operate to give the patron the highest type of SERVICE.

Public Must Be Told and Convinced of Service Rendered

The public is not to blame for what it does not know, and few people have time or disposition to dig into the details of management of a corporation which serves them. But if that corporation brings to the public in a straightforward manner a con-

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Pushing Gas Heater Sales

A few suggestions that may find use in future gas heater campaigns

Frank Farrington

THERE are two profits that come back from the sale of gas heaters; the profit on the heater sale and the profit on the sale of the gas the heater uses when installed. Sometimes we forget one of these, sometimes the other, in considering the heater sales. The profit on the sale of the heater is worth getting and pays for the advertisement and salesmanship involved, and that leaves the profit on the gas as a net gain.

When a central station management leaves the sale of the heaters entirely to outside concerns, hardware stores, mail order houses, etc., it takes about the same position as a phonograph dealer would take if he refrained from pushing the sale of phonographs and devoted all his efforts to selling records.

It is more to the interest of the central station to boost the sale of gas consuming equipment than it can be to the interest of any other concern. Go as far as you can in developing this merchandise end of the business!

You are better equipped to sell heaters than any local store because you know just what types will give the best results. You are in position to make exact installations and to see that the equipment gives adequate service. Tell the public this and get their business on equipment.

Arranging the Window Display

In making displays of heaters in the window, and you ought, by all means, have a window available for the purpose, try to get away from the stereotyped arrangement which comprises nothing but a few heaters set in position. Seek to introduce some interest into the display!

Perhaps the following window display suggestions may afford means for developing more interest in your window than the public has hitherto been showing:

If you were to set a low-priced heater and a high-priced heater in the window and use no show card or sign, or in any way seek to convey any message to observers, the result would be nil. But if you will take the best and highest-priced heater you carry, and one of the cheapest you can get, and place these two side by side on display, with a card that reads, "Compare our cheapest heater and our best; we have others at all between prices," and then put the price on each heater with a smaller card, real results will be obtained. This display is still nothing but two gas heaters, but you have included an idea that sets people to thinking. It gives them your heater price range. It may hold their business from a catalogue house by showing them that they can buy as cheap a heater at home as they can get anywhere.

The Sale of Low-Priced Heaters

You may not like to sell cheap heaters. You may realize their lack of value and quality, even the possible dangers of their use. But people are being asked by mail order houses, through their catalogues, to buy such equipment, and if you do carry low-priced heaters, you lose business. Bear in mind that stocking, displaying, even advertising the cheapest heater you can supply does not necessarily mean selling such equipment. It only shows the people that you can sell them cheap stuff, if they insist upon having it. But by the exercise of good salesmanship you will usually be able to sell something more reliable even to those who come to buy cheap heaters.

An Illustration to Demonstrate the Point

Just to illustrate what I mean, let me mention a druggist I knew who was troubled by cheap competition on hot water bottles. At last he stocked a quarter of a dozen of the cheapest bottle he could find and advertised it at 48 cents, scarcely more than cost. It was a poor thing, but it enabled him to show people that he could sell hot water bottles as cheap as any one. But what happened? People who came in to see that 48-cent article were shown it and told, "This is well worth the price and nobody can beat that price, but we don't recommend its purchase. You will make money and get better value and better satisfaction if you pay more and get an article worth while." As a result of this little plan, he held the business from catalogue houses and he sold more hot water bottles than ever before, and at the end of a year he still had his original quarter dozen 48-cent bottles.

Cheap gas heaters and ranges look well enough in the picture in the mail order catalogue, and people are led to buy them because of the price, but if they can see that grade of stuff before buying they will be easily led to buy something better.

An Example of Getting Around Mail Order Competition

I know a hardware man who, back in the pre-war days, bought an assortment of heating apparatus, gas and otherwise, from a Chicago mail order house. He placed this line in a department in his store, so

located that to reach it people had to pass his own excellent stock of good quality goods of similar type. He advertised that if people wanted mail order stuff they could get it from him. He marked these goods at just the catalogue prices, with no additional charge for freight. As new catalogues came out and prices advanced, he changed the prices to match. Today he has carried that stock through the war and through the price changes of the years following. Prices have gone up and to some extent down again, and he still has that original stock save for one single item he sold to a man who could not be induced to take anything else. And that dealer is not worried any about mail order competition.

An Attractive Window Display

But to come back to the subject, the following is an attractive window display: An attractive setting for a gas heater can be made by building up a dummy chimney breast as a background, using beaverboard and crepe paper with a brickwork pattern. In this way you can display a gas heater in just such a setting as that in which it may appear in a home. A clever operator can go a long way toward making such a display realistic and reproducing the home effect. Such a display halts every passing woman and gets her attention. Then, of course, there is a show card that tells the price of the heater installed, and its quality and its economical features.

The display of various heaters can be given point by showing one a day and each day a different one, suited for a different room in the house. Start in with a library heater. Use a large card saying, "A Heater for Every Room in the House. Watch the Display. Today No. 1. For the Library. This style $....."

If you can secure an old-fashioned heater, you can use it as a window attraction. Perhaps you can locate an old Franklin stove that can be borrowed for display. Put this in the window and along with it a modern gas heater. A card on the old stove says: "The Stove Your Grandmother Used." On the gas heater the card may read, "The Clean, Quick-Acting Heater You Can Use."

Other Suggestions

When you run across a gas heater that has had a surprising number of years of use and had stood up under it well, get the privilege of showing it in the window. Use a card that says, for example, "Here's a Gas Heater in Actual Use for .. Years. Still in Good Condition." If possible, have a fire burning in it while on exhibition.

One way of making the price of a high-grade heater seem low is to refer to the durability of the stove and to the consequent low cost for its period of usefulness. For instance, "Heaters of This Type Ought to Last 20 to 30 Years. Priced at $...., That Means .... a Year or Less. A Heater Priced at Half as Much Might Cost Twice as Much in Use."

Employee Organizations Engender Spirit of Enthusiasm

R. E. Polk

The get-together spirit is very much in evidence in the various employee organizations. The value of such organizations cannot be over-estimated. They are far-reaching in their scope and their influence can only be for good. They create a spirit of good-fellowship that is invaluable. They bring fellow-workers together so that they get to know one another intimately and grow to understand one another. At their various meetings their problems are discussed from many angles in a helpful and enlightened manner. They foster the highest ideals, increase pride in the lines of work in which the members are occupied, build up a spirit of the right kind of loyalty to their company and in many ways make life and labor more pleasant and more interesting.

Enthusiasm a Great Asset for Success

All these things help to bring about one of the greatest assets for success, an asset without which life will always be more or less drab and dull, enthusiasm. No matter how humble one's position may be nor how simple one's daily allotted tasks, to tackle such tasks with an enthusiastic spirit and with a grim determination to do whatever one has to do as well as it can be done—or even better; that is the spirit that spells success. As "great oaks from little acorns grow," so do the doing of little things bring to the enthusiastic workers bigger things to do, bigger positions to gain and the joy that comes with recognition of work well done.

There is magic in the word "enthusiasm," a bubbling delight that makes the blood tingle. Just what enthusiasm means was well described several years ago by a writer, who said:

What Enthusiasm Means

"Enthusiasm is the greatest business asset in the world. It beats money and power and influence. Single-handed, the enthusiast convinces and domi-

(Continued on page 324)

INDUSTRIAL GAS LESSONS

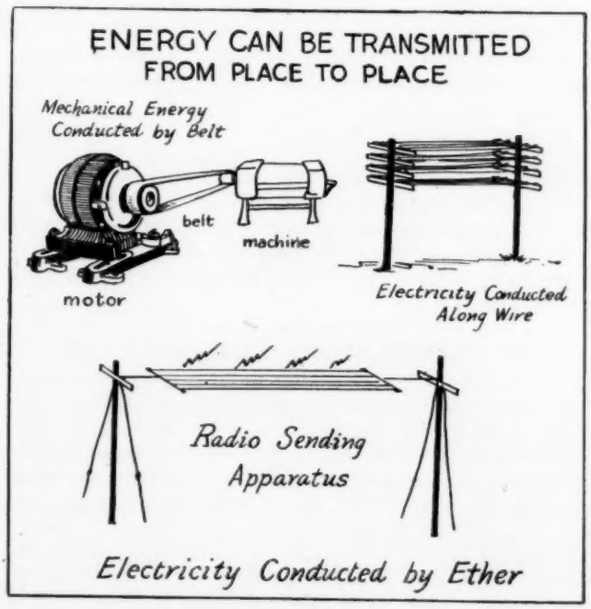
IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 14

The Transmission of Heat

The Movement or Transmission of Heat

Heat, like other forms of energy, can be moved or transferred from place to place. In fact, it is a difficult matter to contain it in any substance or at any point. The electric current travels through the ether or in a confined path along a wire. Mechanical energy is transferred from the point at which it is generated, for example, the motor, to the machine at which it is used by the medium of a shaft or other suitable power-carrying device. Similarly, heat energy travels from one part of a substance to another, or from one substance to another at a distance from it in various ways.



In fact, there are three ways in which heat can be transmitted from one body to the next, viz., by conduction, by convection and by radiation.

Heat Transmission by Conduction

This is the commonest way in which heat energy is moved from the heating medium to the heated body. It implies that the two are in close contact with each other. It is also one way in which heat is transferred from one part of a substance to the other. Thus, when a cold bar of iron is held in a fire, the end in contact with the heat becomes hot and gradually this heat is conducted to the cold end of the bar, until it can no longer be held in the hand. The heat from one particle of the solid iron is transferred to the next particle directly in contact with it until the entire mass of the iron is heated up to a uniform point. Conduction of heat does not take place unless there is actual physical contact between the hotter and colder bodies.

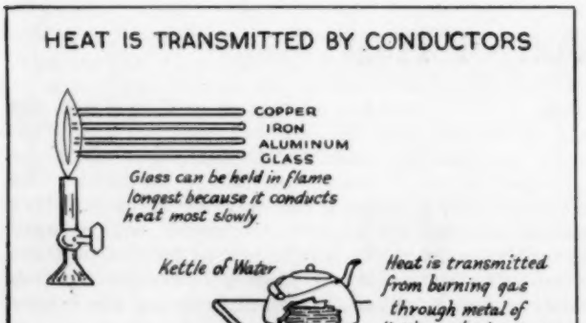
Heat is transmitted by conduction from a hotter to a colder body when the two are in direct physical contact. Thus the heat of the burning gas in the gas stove burner is conducted through the metal of the water kettle and by direct contact is transferred to the water in the kettle. Many commercial applications of heat are dependent upon this principle of heat movement. The heat for boiling water in steam boilers is conducted through the metal of the same. Closed feed water heaters, economizers, superheaters, mechanical refrigerating systems, all work on this principle, as do furnaces of all sorts fired with gas, gas-heated kettles and many other types of apparatus fired with gaseous and other fuels.

Specific Conductivity

One fact that becomes evident right at the beginning of the study of conduction of heat is that some bodies conduct heat away from a warmer body more rapidly than others. Thus, the heat of the hand is conducted away much more rapidly in contact with a bar of iron than with a piece of woolen cloth. That is why the two substances, even though they are at the same temperature, feel so different to the touch. The woolen cloth feels considerably warmer than the bar of metal. Each and every substance possesses a certain rate of conducting heat, which is called its specific conductivity. This refers to its internal capacity of conducting heat, the rapidity with which the heat will move from one part of the substance to the next.

The difference in heat conduction in substances is further illustrated by a simple experiment. Hold a copper rod, an iron rod and an aluminum rod, all of the same diameter, and hence all possessing the identical cross-sectional area, in a fire, say, in the gas flame. The rods are of equal lengths and are all held at the same distance from the end that is in direct contact with the flame. The copper rod becomes hot

quicker than any of the others and the aluminum rod next, while the iron rod becomes hot last. If the experiment is repeated with a glass rod, it will be remarked that after all the metal rods have become so hot that they cannot be held in the hand, the glass rod will still be cold. It is easy to see why glass is used as a protection against cold and why we can have glass windows in a room and still keep it warm. Glass conducts the warmth of the room to the outside air so slowly that there is no difficulty in maintaining a living temperature within it. The heat or thermal conductivity of materials is a very important matter and the gas engineer will meet it in many applications where gas is used as a fuel. He must know the properties of various materials from this standpoint so that he may select the correct ones to use in building heating devices as well as that he may be able to calculate the quantity of his fuel that will have to be used in accomplishing specific heating effects.


HEAT IS TRANSMITTED BY CONDUCTORS
COPPER
IRON
ALUMINUM
GLASS
Glass can be held in flame longest because it conducts heat most slowly
Kettle of Water
Heat is transmitted from burning gas through metal of Kettle and into mass of water by conduction
fire

WHAT WE ARE DOING IN ILLINOIS TO PROMOTE INDUSTRIAL GAS SALES

(Continued from page 310)

miliar with our distributing system. A course of lectures has been prepared, covering as completely as possible our business, under the following general headings:

1. Manufacture and Distribution.
2. Service, Meters and Interior Piping.
3. Routine.
4. Rate Schedules.
5. Burners and Their Application.
6. Combustion Systems.
7. Competitive Fuels.
8. Reports, Letters and Quotations.

Additional Practical Training

Immediately following each lecture, the men are taken to see various plants and installations which serve to illustrate it, and painstaking effort is expended to insure a thorough understanding of the subject matter under discussion.

As these men develop they are advanced to junior sales engineers and later on to senior sales engineers with the assurance that outstanding ability in any of the individual men will surely lead to a junior executive position, as supervisor, and from there to assistant or superintendent, either in our own company or some one of the many rapidly developing Insull properties.

From time to time our men are sent to attend the various conventions throughout the country. They are sent to report on new and improved methods of utilization in other plants. They are encouraged to attend the various meetings of the technical engineering societies, and no effort is spared to develop any member of our organization who shows that he is individually trying to develop himself.

The method that we have adopted must, of course, be simplified for smaller gas companies, and it would be futile to lay down any hard and fast method that would apply equally to the small and large companies, but I would like to impress on you the importance of the very careful selection of the type of man that you are going to use in this work, and that the results that you will obtain will have a direct ratio to the amount of time and effort that you spend in developing the man.

Conclusion

In conclusion, I have a few suggestions that I would like to leave with you:

First, that the industrial gas business today offers an excellent career to young men who have had some engineering training and to those who have a desire to identify themselves with the big industrial undertakings.

Second, to gas managers who are not promoting the industrial gas business, let me appeal to you to go back to your companies and start an industrial department at once, regardless of your gas rates. To those who are pursuing it in a small way, let me ask you to re-survey your possibilities and promote this work more vigorously, for in both cases it will pay big dividends.

LOW TEMPERATURE CARBONIZATION

The results of a study of the low temperature carbonization of the Pittsburgh and Upper Kittanning coals, made by the Department of the Interior in cooperation with the Carnegie Institute of Technology at the Pittsburgh Experiment Station of the Bureau of Mines, indicate that the regular Pittsburgh bed coal is a good low-temperature coking coal. When carbonized at 550 degrees C. in a stationary vertical retort it will yield 33 to 35 gallons of tar, 3,500 cubic feet of 600 B. T. U. gas, 1,400 pounds of 10 per cent volatile coke, and 6 to 8 pounds of ammonium sulphate per ton.

The other parts of the Pittsburgh bed—namely, the rooster, the lower roof, and the upper roof—are of similar coking quality, differing only in the quantity of by-products yielded. These decrease in the order given. The yield of tar from the upper roof is only 66 per cent that from the regular seam, and from the rooster coal 75 per cent. The difference is largely due to the variation in the ash content of the different sections, and not to the chemical composition of the coals.

As The Journal Views It

SALESMANSHIP

Since the days of Van Helmont, effort in the gas industry has been directed almost entirely toward the improvement of manufacturing and distribution methods. In the past the judgment has been that if a commercial gas, that could be sold with a profit at a reasonable price, were made, customers would not be lacking. That this reasoning was not without logic our industry proves.

Time brings changes. The science of salesmanship has been injected into business. No longer do old conditions obtain. Today salesmanship dominates. It is creating competition in fields where theoretically competition cannot thrive. But salesmanship can be combatted—with salesmanship. When our industry has substituted salesmanship for precedent, in its every branch, it will have no competitor. And production will keep pace with demand. Let's go!

PRACTICAL CO-OPERATION

The gas industry and its correlated industries, which are engaged in manufacturing gas appliances and equipment to be used in the application of gas as a fuel, should co-operate with one another in a proper altruistic spirit. The desire to help each other for the mutual benefit of all must be manifested so that the general welfare of the entire industry may be promoted. In co-operative effort there lies strength. To call to mind the fable of the father and his six sons, the ease of breaking one stick, compared with the difficulty of breaking six of them altogether, would perhaps be trite.

But, while it may be thoroughly appreciated and commonly recognized that united effort promotes powerful enterprise and steady constructive development, it must be remembered that each and every participant must benefit through such activity, or else the incentive for co-operation and altruistic effort will be lost, to the disadvantage of all concerned.

While we have no brief to write for any particular branch of the industry, and while this editorial is not intended as being directed toward any individual or industrial entity, its purpose is to emphasize that sometimes effort on the part of organizations, which carry out gratis research investigations on new appliances and apparatus involving the expenditure of considerable time and money, is not given practical appreciation. Sometimes practical co-operation seems to be lacking.

No one will gainsay that while kind words may in themselves be gratifying to those who are always ready to do their best in co-operating with others, nevertheless, a more practical manifestation of the spirit of co-operation will produce greater results and be better appreciated. What there is need of is more practical co-operation between those who undertake to experiment, and those for whose benefit the experimentation is being carried out.

It is only a matter of self preservation for the organization that undertakes to experiment to expect some practical results from the same, and it is really only to the best interests of those who want such work to be done in their behalf that they should in some way be willing to compensate for the work that is done. It ought to be clear to every one that if the experimenter is continually to lose out through his efforts, he will undoubtedly refuse to continue experimenting, the net result of which would be a decided loss to the gas industry as a whole.

Take, for example, the matter of the pressure regulator for linotype machines, which was discussed in a previous issue of the Journal. Here is something that the gas companies should give their attention to. As far as is known, there is no such reg-

GAS WRINKLES

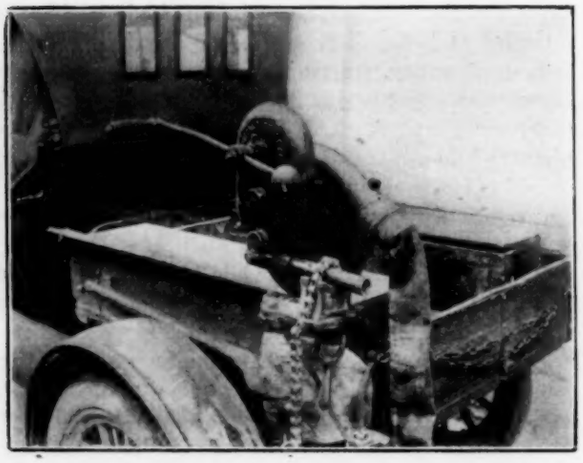
BLOWER FOR PURGING VALVE AND REGULATOR VAULTS

W. G. Rich, Whittier, California

This device consists of a blower from a Buffalo forge clamped in the pipe vise of the service wagon and to the outlet of the blower an old automobile tire tube has been attached.

When the cover of the vault is removed the other end of the tube (which may be lengthened by connecting more than one tube together) is thrown into the vault and the blower operated for a few minutes before the gas man enters the vault.

This device has also proved very useful when removing a regulator from a vault in case the valves will not close absolutely tight. The large volume of fresh air forced into the vault by this blower keeps the air fresh while the men are at work.



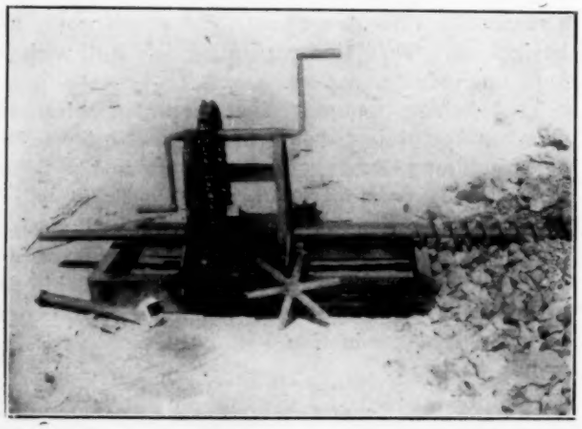
AUGUR FOR BORING UNDER HIGHWAYS

C. F. Wilson, Los Angeles

This device, which is used for boring through the earth under highways, railroad embankments, etc., was made up entirely by the inventor out of scrap material, and about the only tool used in its construction was the oxygen-acetylene cutting and welding torch.

The photograph below shows this device very clearly and by reference to it, it will be noted that the augurs are provided with extension handles which pass through the driving mechanism and can be clamped in any position. These augurs are made in various sizes, from the very small ones, made to drill holes for 1 in. services, up to those large enough to put an 8 in. pipe through.

The photograph shows the principle and construction details so clearly that no description is necessary.



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ulator made and to develop such an appliance would necessitate making research investigations that would involve the expenditure of time and money.

The question then arises, who is to do this? If the gas company does it, all well and good. It can act thereafter in any way it pleases without hurting anybody's feelings. But when an appliance manufacturer goes to the expense of making such an investigation, it naturally expects some business from its altruistic efforts, and if it does not get it it is apt to be very much disappointed, and to say the least a little peeved, and the chances are the next time it is asked to do a similar bit of work it will refuse to do so.

Therefore, the whole matter is really one of self interest. It is to the gas companies' interest to keep appliance development within the broad field of the gas industry. It is to the gas companies' interest to see that those who are progressive enough to undertake research investigations are encouraged in every way to continue to give such service. It should be very clear that unless adequate support is given to these organizations, they will decline to do research and experimental work. They could not very well do otherwise. If they stop, the loss is the entire gas industry's, and most particularly the gas companies'.

Catechism of Central Station Gas Engineering in the United States

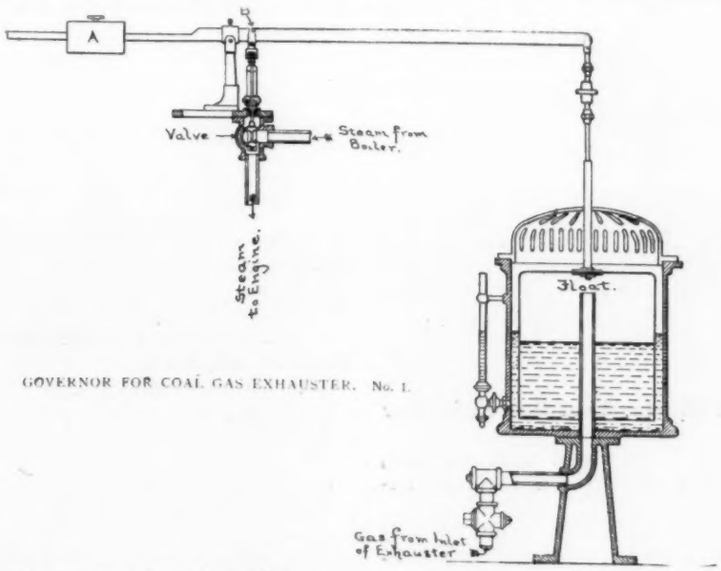
Installment No. 14

(Continued from last week)

Governors for Regulating Speed of Coal Gas Exhauster

69. Give a description, illustrated by sketches, of the construction and operation of one or more forms of governor for regulating the speed of a coal gas exhauster so as to maintain a uniform pressure, or vacuum, on the hydraulic main.

Ans. One form of such a governor is illustrated by the first of the accompanying cuts. The inlet of the exhauster is connected by a pipe, as shown, with the interior of a small holder or float, which is free to rise or fall in a vessel of water. This float is connected to a lever, as shown, and is balanced by a weight A on the end of the lever. At point B, attachment is made to a valve on the steam pipe from the boiler to the engine, the whole being so arranged that as the float rises the valve is opened, admitting more steam to the engine, and as the float falls, the valve is closed, reducing the amount of steam fed to the engine. If the make of gas increases, the pressure in the apparatus between the retort and the exhauster is increased, the pressure in the float is increased, and it rises, opening the steam valve and increasing the speed of the engine. The speed of the exhauster is thus increased, and the pressure at the inlet of the exhauster reduced to normal.



GOVERNOR FOR COAL GAS EXHAUSTER. No. 1.

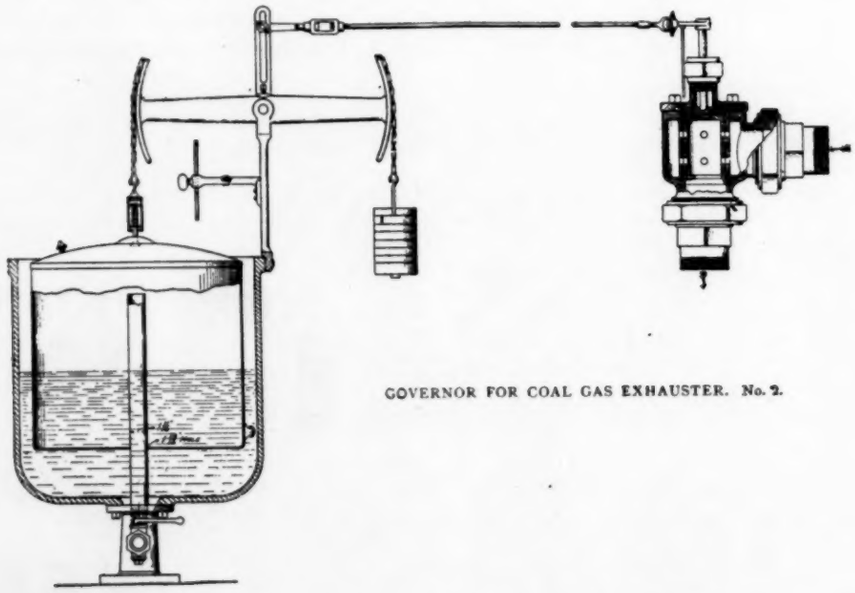
Exhauster Governor With Rotary Lifting Valve

On cut No. 2 is shown another form of exhauster governor embodying exactly the same principles in a slightly different form of apparatus. In this case a rotary, instead of a lifting valve is used to regulate the amount of steam admitted to the engine and the up and down motion of the bell is transmitted to the valve, and changed into a horizontal rotary motion by means of a rocker arm and system of levers, as shown on the cut. Otherwise the action of the governor is exactly the same as that of the one described above.

Conditions for Close Regulation

In order to obtain with these governors a close regulation of the vacuum, maintaining it between limits only two or three-tenths of an inch of water apart, it is necessary that everything about them shall work freely and that there shall be no binding at any point. All bearings and places where there is any movement of one surface upon another must be kept well lubricated and must not be allowed to become gummed up. It is also necessary to restrict the rapidity of motion of the bell so that it will not move so rapidly as to carry beyond the desired point and thus keep the vacuum oscillating violently back and forth and so defeat its own object. This is done in the governor first described by having the stop cock on the pipe connecting the interior of the bell with the inlet to the exhauster, open only a very small amount so that gas can pass in or out at only a slow rate as the bell rises or falls. Small V-shaped grooves, filed one on each side of the hole through the plug of the stop cock, give openings with which the best results are obtained, the plug being set in such a position that the grooves alone come opposite the open-

ings in the barrel, the main opening in the plug being entirely shut off except for the grooves. In the governor shown on cut No. 2 the same result is sought by making the bell with a closed bottom, as shown, and having the opening in this bottom, through which the pressure pipe passes into the bell, only a very little larger than the pipe. As the bell rises or falls, the water driven out, or drawn in, can pass through this opening only very slowly and consequently the bell can move at a slow speed only.

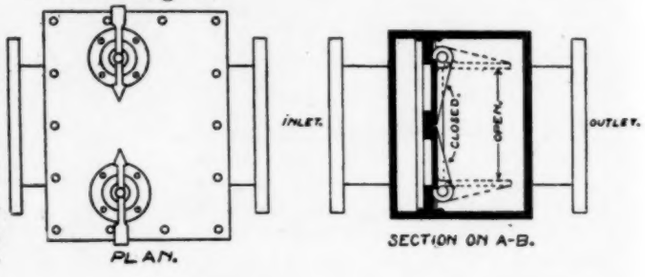


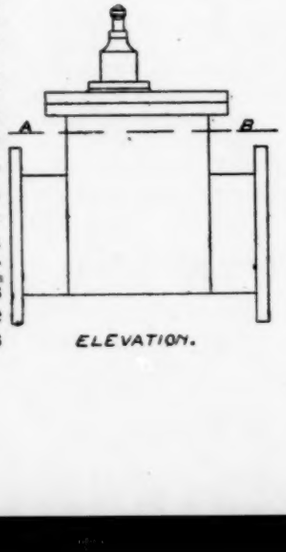
GOVERNOR FOR COAL GAS EXHAUSTER. No. 2.

Automatic By-Pass Valve for Coal Gas Exhauster

70. Give a description, illustrated with sketches, of an automatic by-pass valve for a coal gas exhauster.

Ans. The common form of automatic by-pass valve for a coal gas exhauster is often called a "butterfly" valve. It consists of a cast iron casing, either cubical or spherical, provided with flanges, by which it is attached to the pipe, and with a partition crossing it at right angles to the direction of the pipe. In this partition are two rectangular openings having their long edges vertical, and separated from each other by a strip of iron no wider than is necessary to allow for two narrow facings, one on each edge, which form part of the seats of two rectangular wing valves covering the openings. These valves are pivoted on their outer edges so that they open away from each other towards the sides of the casing. To each valve is attached a rod which comes through a stuffing box or a mercury seal in the top of the casing and has on it a short arm, serving both as a lever by which to open the valve and also as a pointer showing its position. The valve is set in the by-pass pipe with the side of the partition upon which the valves seat toward the outlet side of the exhausters and therefore the backs of the valves are subjected to the outlet pressure and their faces to the inlet pressure. As long as the exhauster is running the outlet pressure is the greater and keeps the valves firmly seated, but as soon as the exhauster is stopped for any reason the inlet pressure becomes greater than the outlet pressure, the valves are forced open and the gas can pass freely through the by-pass. The valves should be tried at regular and frequent intervals to see that they are not stuck to the seats and will be opened before the pressure rises to an excessive height.





AUTOMATIC BY-PASS VALVE FOR COAL-GAS EXHAUSTER.

Washers and Scrubbers

71. What part of a coal gas apparatus is especially designed for the removal of ammonia gas?

Ans. "Washer and washer scrubber."

What Is a Scrubber and a Washer?

72. In a coal gas apparatus what is a "washer"? What is a "scrubber"?

Ans. The washer is a vessel so constructed that the gas passing through it is made to bubble through water. The scrubber is a vessel in which the gas comes in contact with wetted surfaces. These surfaces may be stationary, and be kept wetted by a spray of water thrown over them; or they may, as in the so-called "mechanical scrubber," revolve around a central shaft, dipping in their passage into water, and rising from the water wetted, to come in contact with the passing gas. In a coal gas apparatus the washer is employed to remove ammonia, ammonia compounds, and whatever of tar may be in the gas at the time it reaches the washer, while the scrubber is employed only for the removal of ammonia and ammonia compounds.

What Is Purpose of Coke or Slats in Scrubbers?

73. Why are scrubbers for the removal of ammonia filled with coke or slats?

Ans. Ammonia is removed from gas by means of the affinity water has for ammonia. The gas is brought in contact with wetted surfaces of wood, coke or other material in cylindrical vessels called scrubbers. The greater the amount of wetted surface with which the gas comes in contact, the more efficient is the scrubber. It is important, therefore, that the filling material for scrubbers should present large surfaces to the gas, and should be of such a form, and so arranged, that the gas in passing through it would be broken up into many small streams. Coke, or wooden slats arranged in grids, answer these conditions, and, therefore, are the materials generally used in filling scrubbers for the removal of ammonia.

Filling Materials and Their Advantages

74. What are the various materials used for filling tower scrubbers and the respective advantages and disadvantages of these materials?

Ans. King's Treatise on Coal Gas mentions the following materials as being used for filling tower scrubbers when this form of apparatus was first employed: coke, small stones or pebbles, bricks, drain pipes, tiles and timber, and adds "or other material presenting a large surface to the action of water and gas." With longer experience coke came to be preferred on account of its lightness and also because it could be burned when removed on account of becoming clogged up with tar or naphthalene, and thus, since coke that would otherwise have been used for fuel was taken for refilling the scrubber, there was no expense incurred, either in cleaning it or in providing a new supply, as was the case when the other materials were used. The objection to coke was its liability to crumble under the weight of the coke above in the high column existing in the scrubber.

After scrubbers had been in use for some time, Mr. Geo. Livesey introduced the method of filling them with bundles of thin boards on edge which has since largely displaced the use of coke. Mr. Livesey used boards ¼ in. thick and 3 in. high, spaced ¾ in. apart and made up into bundles of a length and width suited to the diameter of the scrubbers to be filled. As used at present in this country the boards are from ⅜ in. to ½ in. thick and 6 in. to 9 in. high, and are made up with ½ in. spaces between them. The bundles are built up tier by tier, each tier resting on, and being laid with the boards at right angles to, those in the tier below. At proper intervals in the height of the scrubber, supports are provided so that space can be kept between the adjacent tiers to permit a redistribution of the gas and also to allow the removal of part of the boards if necessary without disturbing the others.

Space Occupied by Fillers

Mr. Livesey calculated that for each cubic foot of space occupied,

Coke gives about 8½ sq. ft. of surface.

Boards give about 31 sq. ft. of surface.

Coke occupies ½ the cubical contents.

¼ in. boards spaced 1 in. centers occupy ¼ the cubical contents.

While it costs more to fill a scrubber with boards than it does to fill it with coke, the advantages of greater freedom from stoppages, capability of being cleaned without being removed, larger area of surface for contact between gas and water and the securing of a slower speed of travel of the gas by the smaller space occupied, possessed by the boards, more than counterbalance this excess in first cost and make the boards the best material for filling tower scrubbers.

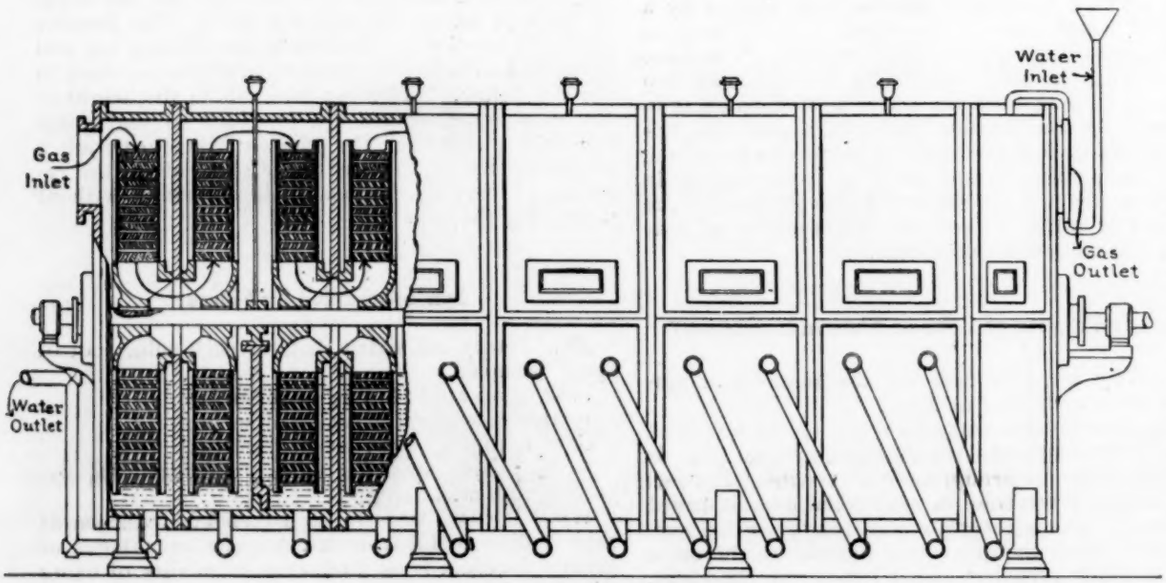
Descriptions of Types of Scrubbers

75. Give a description, illustrated with sketches, of one or more forms of scrubbers used for removing ammonia from coal gas.

Ans. The scrubbers first employed in the manufacture of coal gas were of the well-known tower type, which in this country is still largely used in small works. These scrubbers consist of a shell of wrought or cast iron, either square or cylindrical, and ranging from 12 ft. to 60 ft. in height, the diameter being 1/4 to 1/5 the height. This shell is filled with some material which is of such a nature, and is so placed, as to form numerous narrow channels, in traveling through which the gas, which enters at the bottom and leaves at the top of the scrubber, is forced to pass over a large area of surface wet by water supplied in a suitable quantity and distributed

over the top of the filling material in such a way that as it trickles down through this material all of the surfaces presented to the gas are kept thoroughly and uniformly wet. The proper distribution of the water over the material without the use of so much water as to make the resulting ammoniacal liquor very weak is one of the most difficult problems in connection with the working of tower scrubbers.

As usually built in this country at the present time these scrubbers have cylindrical wrought iron or steel shells, 3 ft. to 6 ft. in diameter and 12 ft. to 20 ft. high, and are filled with bundles of thin boards on edge, the boards being from ⅜ in. to ½ in. thick and 6 in. to 9 in. high and the bundles being made up with ½ in. spaces between the boards and of a length and width suited to the diameter of the scrubber to be filled. These bundles are built up tier by tier, each tier resting on, and being laid with the boards at right angles to, those in the tier below. At proper intervals in the height of the scrubber, supports are provided so that space can be kept between the adjacent tiers of boards in order to permit of a redistribution of the gas and also to provide for the removal of one set of bundles, if necessary, without disturbing the others. Various methods are employed to secure a uniform distribution of the water. One is to force the water in a single jet through a nozzle opening upwards in the center of the scrubber and cause it to strike against a metal disc placed a few inches above the nozzle and thus to be broken up into a spray which falls very uniformly over the whole surface of the top tier of boards. Another is to allow the water to trickle through a number of small perforations made in pipes, which are inserted radially through the sides of the scrubber immediately beneath the top plate. Provision is made for the easy removal of these pipes to permit the examination of the perforations, and their cleaning in case they become clogged.



ROTARY SCRUBBER.

MANUFACTURING PLANT.

Use of Rotary or Mechanical Scrubber

In larger works the tower scrubber has been almost superseded by some form of the more modern rotary or mechanical scrubber. One form of rotary scrubber is illustrated on the accompanying cut. The shell is of cast iron, and in shape is a rectangular prism surmounted by a half cylinder. It is divided into a number of compartments by means of plates at right angles to its axis, one set of these plates being the full size of the cross section of the shell and having circular openings, the centers of which are on the axis of the half cylinder, while those of an alternate set extend from the bottom to the top of the prism only. The shell is traversed lengthwise by a shaft, the axis of which coincides with the axis of the cylindrical portion, and which is supported by suitable bearings on the end plates and on the second set of cross plates mentioned above. On the shaft are fastened annular bundles of wooden slats, there being one bundle for each compartment of the shell, built up so that the gas can travel between the slats from outer to inner circumference of the bundles, or vice versa, but not straight across the bundles parallel to the shaft. The central openings of the bundles are alternately closed and opened in such a manner in conjunction with the arrangement of the cross plates that, when the scrubber is filled with water to the proper level, the gas is forced to travel through the upper half of the bundles from circumference to center, and from center to circumference, alternately, as shown by the arrows.

(Fifteenth Installment Next Week)

GAS—A CAGED WIZARD

(Continued from page 311)

But in time this difficulty may be overcome by extensive use of gas for refrigerating purposes. The up-to-date cooling plants use gas heat for boiling off ammonia after the latter has gone the circuit in its icing functions and has been absorbed into water. Until refrigeration has created a larger summer load, gas men are leaving mostly to the oil-burner the campaign against anthracite for domestic heating. Oil is at present the cheaper fuel, which is another argument for the same position. But in the long run oil cost will be far from present figures, and the gas-makers expect then to deal successfully with that phase of the problem if they want to.

How Gas Saves Coal

Ask the ambitious gas man about the future and he will tell you that the industry is capable of immensely more benefit to the community. He will declare that virtually everything now done with coal can be done with gas or coke, that by burning coal in the gas retort instead of the furnace there is possible an almost incalculable saving.

Much coal is wasted in handling; more in careless burning. From all that is burned in furnaces, the gas goes into the air without a particle of service and the valuable by-products are lost. One ton of coal will produce in the neighborhood of 10,000 cubic feet of gas; 1,000 pounds of salable coke for water gas making or for smokeless fuel; 5 pounds of ammonia and nine gallons of tar with a wide-spreading family of sub-distillates for chemical and medicinal uses. Still further, it is urged that the smoke nuisance created by burning soft coal would be banished, barring railroad use, by a wide enough utilizing of gas and coke. This item alone involves a large economic saving in public health, in the life of steel structures and interior finish, and in many other ways.

The Raw Material Problem

Some 30 per cent of the manufactured gas used in the United States is coal gas—that is, it is made in retorts from bituminous coal. The balance is mostly carburetted water gas.

Straight coal gas gives a good heating value, but to meet legal standards special varieties of coal are required, and occasionally enrichment is necessary, either with oil or by mixing with carburetted water gas already so enriched. Bituminous coal for gas-making is abundant, subject only to the influence of legal heating standards in forcing the use of coal from distant points when nearby coal would give adequate service. For a single example, Illinois has large coal supplies and the average haulage of coal consumed in the state is 170 miles. Yet its gas coal comes an average distance of 400 miles from Kentucky.

Oil Supply Not Permanent

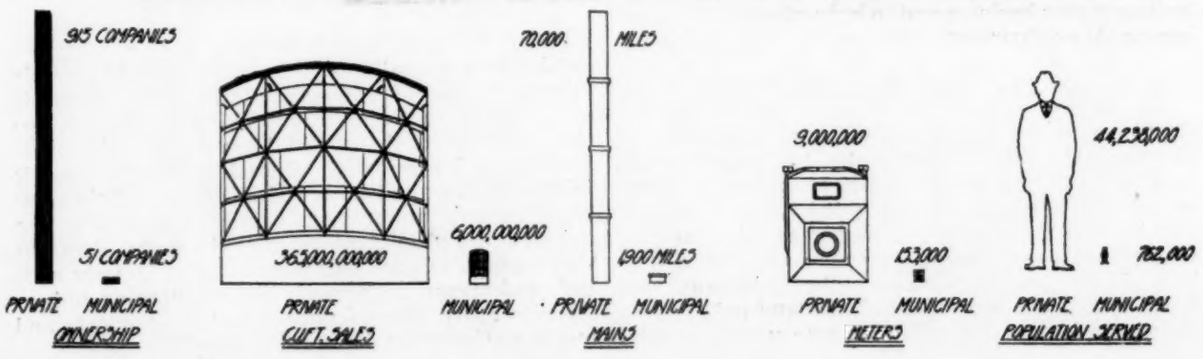
Ample bituminous coal means an assured provision of material for coal gas manufacture and of coke for water gas. Anthracite coal is used largely for gas, but obviously it is not a resource for any great length of time.

Now arrives the real problem—oil. Gas oil is a slim reliance, for two reasons. One is the short lease of life which experts give to practically the entire supply of petroleum in the United States; say twenty-five years. And a second is the gasoline engine. In earlier days, gas oil was abundant and cheap. With the rise of the automobile and motor-truck and the cracking process for extracting gasoline, the fraction available for gas-making became inferior and costly. The abnormal gasoline demand of the war period gave the oil question an extra twist; deflation brought relief. But regardless of all temporary influence, the fact remains that oil for bringing gas to present heating standards can be had for only a limited period.

Mixed Gas Logical Solution

Considering the higher heat value of coal gas compared with uncarburetted water gas, and the obvious utility of operating coal gas and water gas plants together with the first supplying coke to the second,

MUNICIPAL VERSUS PRIVATE OWNERSHIP IN MANUFACTURED GAS INDUSURY



all of this points to an eventual solution of the problem by mixing the two products. Gas men say this would produce a quality that, although well below present standards, would give excellent service. Similar results are promised by the new method of steaming the coke from coal gas while still in the retort, and another possibility of the future is the oxygen process for complete gasification of the coal, giving six or seven times the present volume of gas though virtually eliminating by-products.

Heat Content Still a Problem

Standards fixed around 600-650 British thermal units proved quickly to be too high, the engineers finding that, owing to a large proportion of condensible hydro-carbons, tending to clog the distributing system, lowering of standards would mean an actually better service to the consumer. Once more the companies went to work on the commissions, and by a gradual process standards have been scaled to a general average of about 550-560 B. T. U.

But with all concessions the problems of standards remain for further consideration as time goes on. The general level indicated above is roughly 9 per cent over the average for leading British companies, and compares with a standard of 450 B. T. U. for all parts of Canada. Uneconomical carrying of coal over long distances is a fault of present rules in some regions, but the defect of these tests, which is most deep-seated and menacing, is due to the oil problem.

Elasticity of Standards

The gas man declares that elasticity of standards must come if the industry is to serve its logical function. He points with pride to the action of the Colorado commission in leaving to the company the right to fix whatever standards they find suited to local conditions, and urges that exact B. T. U. content of the gas is far less important to the consumer than uniformity of quality and pressure.

With still more emphasis he sets forth that standards and profits are unrelated. The company is allowed to make only a fair return on its investment. If a lower standard means lower cost, which is never the case in direct proportion, then the commission will of course lower the rate if the former price was a fair one. It is not to make more money on a cubic foot of gas that the companies are aiming, but to keep on doing business and to expand with the growing needs of their communities.

The "Three-Part Rate"

The rate problem is important, but is a question of system rather than absolute level. The flat rate, such as $1.50 per thousand feet, is unscientific and inequitable. Barring the miscalled "service charge" which some companies are permitted, the flat rate means that many small consumers are served at a loss. Moreover, the company collects the same rate from Jones, who uses his peak demand only once a month, as it does from Brown, who uses it several times a week. Yet in all equitable reckoning it costs as much to be ready to supply Jones as it does in the case of Brown.

Hence the "three-part rate," in which the Doherty properties are pioneers. It consists of a customer charge based on accounting and other operating costs which are practically uniform for all customers; a readiness-to-serve charge based on the customer's maximum demand as determined by his burners and the size of the meter required; and then a flat rate per thousand for gas actually consumed. It looks like a large bill until you get to the charge per thousand, which may be half or less of the previous flat rate.

Securities Rank High

From all the facts above reviewed bearing on the growth, the vital services and the expansive outlook of the gas industry, it follows without argument that gas company securities rank with the best of public utility issues in solidity and stable values. It is necessary that these facts should be known to investors, to whom an increasing offering of securities for the further development of the gas utility is certain.

Far-Sighted Policy Needed

Regulating policies of the commissions are generally equitable, and the attitude of the courts has been so plainly expressed that no company need fear confiscatory rate action, either state or local. The question for the future is mainly one of elasticity. Assurance of compensatory rates leaves something to be desired in opportunity to meet situations and to make adjustments in both product and rates necessary for the fullest development.

From the financial standpoint this problem comes most obviously into view when attention is given to junior financing. Largely assisted by customer ownership, utilities have taken a long way the lead of the railroads in stock issues needed to back up bond financing. But much remains for accomplishment, and in the gas field a far-sighted policy of regulating commissions toward standards as well as rates will be one of the factors essential to success.

EMPLOYEE ORGANIZATIONS ENGENDER SPIRIT OF ENTHUSIASM

(Continued from page 314)

nates where a small army of workers would scarcely raise a tremor of interest. Enthusiasm tramples over prejudice and opposition, spurns inaction, storms the citadel of its object, and, like an avalanche, overwhelms and engulfs all obstacles. Enthusiasm is faith in action; and faith and initiative rightly combined remove mountainous barriers and achieve the unheard-of and miraculous. Set the germ of enthusiasm afloat in your business; carry it in your attitude and manner; it spreads like a contagion and influences every fiber of your industry; it begets and inspires effects you did not dream of."

SELLING THE BIGGEST THING IN THE WORLD

(Continued from page 312)

tinuous series of facts concerning the skill, knowledge, faithfulness and continuous character of the efforts expended in their behalf—then the public will react favorably by greater consideration and understanding of the difficulties which have to be overcome to give them such SERVICE as is constantly available. The Chambers of Commerce, Rotary clubs, Kiwanis clubs and similar organizations have performed an excellent work in bringing outstanding business men together, and in giving each an opportunity to understand the difficulties, responsibilities and obligations of the other.

A Gas Man Sells His Service

At a recent meeting of a well known Chamber of Commerce, the head of a gas company serving a large area appeared and gave a very clear and helpful talk on what his company was doing and the difficulties it met in serving the public in the best possible manner. He touched upon some of the hard things to be overcome and told of the faithful SERVICE, the big investment in equipment, and the eternal vigilance necessary to keep such a system up to par all of the time.

That day this official succeeded in selling his SERVICE and his company's SERVICE in a big and fine way. The closer the co-operation and the clearer the understanding between those who sell SERVICE and those who use it, the better. It is a case, invariably, of the one who serves best profiting most. This is inevitable. Selling the biggest thing in the world is a large order. But what of it? Only weaklings want easy, soft jobs. A wise man has said that the business man of today can succeed in any line of business in which he chooses to venture, provided he does what he undertakes a little better than the other fellow.

In short, the company that would win must not have any weak links in its chain. Its SERVICE must be right and tight and superior from A to Z, and that SERVICE must include prices which give "Value Received" and "Satisfaction" with it.

The man who sells the biggest thing in the world—SERVICE, is bound to have to measure up to a high standard himself, and in doing this he profits in those ways to which he is entitled—in money and in the joy of the job.

Let us sell SERVICE—better SERVICE than we have ever sold before!

INDUSTRIES' ADOPTION OF GAS FOR ALL HEAT PROCESSES SPREADING

Adoption of gas for heating purposes in industrial lines, during 1923, was of such magnitude as to be almost revolutionary. More manufacturers turned to this process of heating during that year than had done so in all time previous.

It is a conservative statement to assert that there is only one possible parallel to this movement in the industrial history of the United States.

That parallel lies in the manner in which manufacturers, during very recent years, have turned to electrical energy to supply their power needs.

Industrial gas is being sold on an entirely new basis, which, also, is comparable only to that of the sale of electrical energy for power purposes.

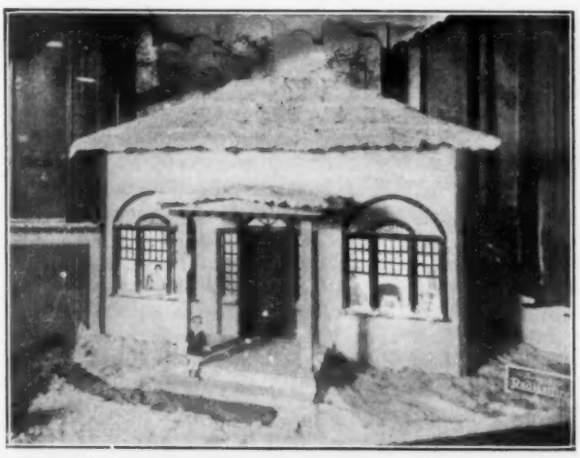
Engineering knowledge and skill in applying gas to various heating operations in all lines of industry has led to a general awakening of manufacturers to the value and economy of "doing it with gas."

After jogging along peaceably for two or three decades, the gas industry suddenly has begun to "come into its own." This has resulted in an actual gas consumption increase of more than 100 per cent in the United States during the last ten years—this despite a rapidly diminishing use for lighting purposes, the original use.

In 1910 only 5 per cent of the nation's total gas production was used for industrial heating purposes in factories and shops. In the subsequent ten years the ratio grew to 25 per cent.

A STRIKING WINDOW DISPLAY

The above represents one of the recent displays in Portland, Oregon, where the Portland Gas & Coke Company had a window scene with a little house as shown in the photograph, brilliantly lighted from within but no lights on the outside, so that during the gloomy, rainy days of January it made a very striking appeal. The children are playing in the house, enjoying the "Radiantfire" in the fireplace. On the mantel is the only advertising that can be seen, announcing the wonderful service and inexpensive operation of a radiantfire.



MAKING PARTNERS OF CUSTOMERS IN COLORADO

(Continued from page 308)

Campaign Organized Along Military Lines

Denver adopted a military organization for its campaign, with generals, colonels, majors, captains and lieutenants at the head of the various units of the selling force.

The Western Division constituted a separate "army," but instead of carrying the military idea into the actual sales machinery, it was found more practical to designate selling units by cities or towns. The Lakeside Construction Company, which is building the new Valmont plant near Boulder, was also a sales army.

In a general way, the Denver selling force followed the business lines of the organization of the company. The general superintendent of the company, had the operating department for his army. The Denver new business manager had the new business department for his army. The secretary of the company had the accounting and general office departments in his army. The treasurer had the publicity and advertising, coke, tar, safety and claims, and budget departments, along with the directors of the company, the banks, the Electrical Co-operative League of Denver, the Arapahoe Light and Power Company, the Jefferson County Power Company, the Arvada Light and Power Company and the Summit County Power Company.

The manager of the securities department did not enjoy the same advantages of the other generals in that he had no "army" organization, practically all of his time being taken by the greatly augmented routine of business that fell to his department by reason of the sale. Despite this fact, however, this department sold 715 shares of stock.

Prizes Offered for Best Work Done

Four prizes were offered in each of the two divisions. They were $100 for the employee selling the largest number of shares of stock; $50 for the second highest number of shares; $100 for the most new stockholders, and $50 for the next largest number of new names.

In the Western Division, Cheyenne carried off two prizes and divided a third, while Boulder won one first and divided one second prize. F. S. Peterson, an engineer in the electric distribution department at Cheyenne, was high man, with 166 shares of stock sold. J. O. Mulford, stores department, Boulder, obtained 44 new stockholders, thereby winning first prize for new names. Peterson, with 42, was second high for new names, while Mulford, with 149, was second in shares sold, but each waived claim to second prizes. Sam Payne, gas superintendent at Cheyenne, was next high man in both shares sold and new names, with 98 and 35, respectively. He, therefore, had clear title to one second prize. This left D. G. Guiney, Boulder, assistant treasurer of the company, and George Brannon, electrical superintendent at Cheyenne, in a peculiar tie. Guiney sold 88 shares to 32 new stockholders, while Brannon sold 98 shares to 31 different purchasers. They divided the prize money.

In the Western Division, Boulder led with 1,454 shares and 512 sales. Fort Collins was next with 675 shares and 248 sales, and Cheyenne third with 657 shares and 231 sales. Other results were: Lafayette, Louisville and Puritan, 189 shares and 63 sales; Loveland and Berthoud, 70 shares and 43 sales; Windsor, 73 shares and 20 sales; Longmont, 51 shares and 8 sales; Wholesale, 39 shares, 18 sales. Sales on the Western Division averaged 14.6 shares per employee. One hundred and eight of the 220 employees on this division bought 235 shares of stock.

No better record was made anywhere on the property than that by Fort Collins. There the campaign came practically to a dead stop when a 82,000,000 cubic foot gas well came in at a point 12 miles north of town, and Fort Collins proceeded to go oil and gas crazy. Despite this handicap, the force pulled itself together and during the last two days of the campaign made a real Garrison finish, winding up with an average of 30 shares per employee, only one share below the average of the Boulder general office force.

Two wholesale customers of the Public Service Company of Colorado, the Home Gas and Electric Company at Greeley and the Fort Lupton Light and Power Company, requested that they be permitted to participate in the campaign. They took an active part, going to the extent of sending the Public Service Company's general letter to all customers, together with a special letter of their own urging customers to buy Public Service Company preferred stock. Everything considered, very encouraging results were obtained in the wholesale territory.

BUREAU OF STANDARDS' TENTATIVE PLAN FOR TESTING GAS APPLIANCES

Manufacturers of gas appliances, and gas companies in general, will be interested to learn that the Bureau of Standards of the Department of Commerce, Washington, D. C., has issued an outline of a tentative program for a testing of gas appliances, with the intention of safeguarding the public health and reducing all hazards from carbon minoxide poisoning that may arise from appliances that are not correctly constructed. The pamphlet that has been issued contains a series of specifications which are said to be simple in character, and also contains a detailed description of the methods which will be used in order to ascertain the performance of gas appliances under certain of the conditions to which they will be put in practical work. A copy of this program can be obtained by addressing Mr. George K. Burgess, Director Bureau of Standards, Washington, D. C.

Current Market Prices

COALS (By Courtesy of Coal Age)

A. Bituminous.

(Spot prices, F. O. B., mines, net tons).

High Volatile, Eastern	Market	Price
Pool 54-64 (Gas Standard))	New York	$1.40 to $1.65
Pittsburgh screened gas	Pittsburgh	2.50 to 2.65
Pittsburgh gas, mine run	Pittsburg	2.25 to 2.35
Kanawha lump	Columbus	2.40 to 2.70
Kanawha mine run	Columbus	1.45 to 1.70
West Virginia lump	Cincinnati	2.00 to 2.50
W. Virginia gas mine run	Cincinnati	1.25 to 1.35
Midwest		
Indiana 4th vein lump	Chicago	2.75 to 3.00
Indiana 4th vein mine run	Chicago	2.25 to 2.50
South and Southwest		
Big Seam lump	Birmingham	2.50 to 2.75
Big Seam mine run	Birmingham	1.75 to 2.25
Southeast Kentucky lump	Louisville	2.75 to 3.25
Southeast Kentucky mine run	Louisville	1.40 to 2.00

B. Anthracite.

(Spot prices F. O. B. mines, gross tons),

Market	Freight rates	Independent	Company
Egg New York	$2.34	$7.75 to $8.25	$8.25 to $9.25
Egg Philadelphia	2.39	8.50 to 10.00	8.75 to 9.25
Egg Chicago (net tons)	5.06	7.50 to 8.80	8.00 to 8.35

COKE (By Courtesy of Iron Trade Review).

Connellsville, furnace	$4.00 to $4.25
Wise County, furnace	4.75 to 5.75
Alabama, furnace	5.00 to 6.00
Foundry, Newark, N. J., del.	10.91
Foundry, Chicago, ovens	12.50
Foundry, Boston, delivered	12.50
Foundry, St. Louis	12.50
Foundry, Granite City, Ill.	12.50
Foundry, Alabama	5.00 to 6.50

PETROLEUM (By Courtesy of Oil, Paint & Drug Reporter)

(Prices at wells, per bbl.)

Pennsylvania—Ohio—West Virginia.	
Cabell, West Virginia	$2.20
Corning, Ohio	2.15
Lima	2.28
Pennsylvania	4.00 to 4.50
Wooster, Ohio	2.15
Indiana—Illinois.	
Illinois	2.07
Indiana	2.08
Oklahoma—Kansas.	
Healdton	.90
Mid-continent (low gravity)	1.00
Gulf Coast.	
Gulf Coast, Grade A	$1.80
Gulf Coast, Grade B	1.50

GAS OILS.

Gas Oil, Bayonne, bulk gal.	5½c
Gas Oil (32-36) Illinois-Indiana, gal.	5.63 to 5.88c
Gas Oil (32-36) Oklahoma, gal.	3 to 3¼c
Gas Oil (32-36) Gulf Coast, gal.	4½ to 5 c

PIPE AND FITTINGS—CAST IRON GAS PIPE.

(By Courtesy Iron Trade Review.)

Four-inch, Chicago	$66.20 to $67.20
Six-inch and over, Chicago	62.20 to 63.20
Four-inch, Birmingham	57.00 to 58.00
Six-inch and over, Birmingham	53.00 to 54.00
Four-inch, New York	70.60 to 71.60
Six-inch and over, New York	65.60 to 66.60
Standard fittings, Birmingham, base	115.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20.

BY-PRODUCTS

(By Courtesy of Oil, Paint and Drug Reporter)

Ammonia aqua, 16 deg. drums lb.	5 to 5¼c
Ammonia aqua, 20 deg. drums lb.	6¼ to 6½c
Ammonia aqua, 26 deg. drums lb.	6¾ to 7 c
Ammonia squa, anhydrous cylinder, lb.	30 to 36 c
Ammonium sulphate, bulk F. O. B. Works, per 100 lbs.	$2.85 to $2.95
Potash prussiate, yellow casks, lb.	19 to 19½c
Potash prussiate, red casks, lb.	42 to 45 c
Soda prussiate, yellow casks, lb.	13 to 13½c
Soda sulphocyanide, barrels, lb.	45 to 55 c

COAL TAR BASIC PRODUCTS.

(By Courtesy of Oil, Paint and Drug Reporter)

Benzol C. P. tanks, works, gal.	25 to 30c
Benzol, drums, gal.	30 to 35c
Benzol, 90% tanks, works, gal.	23 to 28c
Benzol, 90% drums, gal.	28 to 33c
Napthalene, flake, barrels, lb.	6 to 7c
Napthalene, crushed bags, lb.	5½ to 6c
Solvent Naphtha, water white works, gal.	28c
Solvent Naphtha, drums, works, gal.	33c
Solvent Naptha, Crude Tanks, works, gal.	25c
Solvent Naphtha, drums, works, gal.	30c
Toluene, C. P. tanks, works, gal.	31c
Toluene C. P. drums, works, gal.	36c

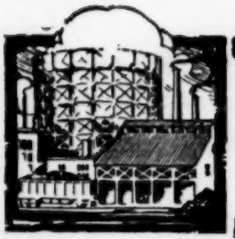
The coal consumer's method of "wait and see" is being carried to such lengths that stagnation prevails in the coal markets of the country. Everyone continues to hold back to see what will happen, but nothing happens. Even the closing of contracts, which ought to be in evidence at this time, is conspicuously backward, and that despite the low levels that prices have reached.

Production of bituminous coal during the week ended March 22 amounted to 9,309,000 tons, according to the report of the Geological Survey, which was 318,000 tons less than was produced during the previous week. Output of anthracite totaled 1,804,000 tons, a decline of 137,000 tons compared with the preceding week, when 1,941,000 tons were mined.

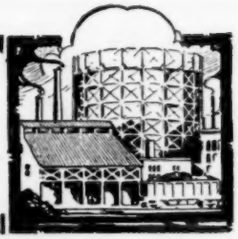
At present crude oil production is steadily on the decline. The report of the American Petroleum Institute for the week ended March 22 shows that during that period the output decreased at an average of 4,900 barrels a day, as compared with the previous week's figures. The latter were 4,700 barrels a day below the estimate for the week ended March 8.

Taking these and other figures into consideration, many who are in close touch with the crude oil situation insist that the close of the year will find production far below consumption requirements.

Practically all of the larger companies are completely sold up on gas and fuel oils, and are not accepting any more orders for the present. In fact, several of the leading concerns will not handle any business whatever for delivery this year, and discontinued their quotations more than a month ago. It is explained that the present situation is due to a heavy export demand and a reduced production resulting from the slump in the crude oil output in California and Mexico, where the greater part of the raw material for these varieties of oil is obtained.



NEWS OF THE GAS INDUSTRY



Illinois Gas Association Holds Annual Meeting

The Illinois Gas Association held its annual meeting on March 26 and 27 in Chicago, Ill. The meeting was part of a joint convention of utility associations in the State of Illinois, and was attended by a large number of delegates. A very enthusiastic reception was given to the rather comprehensive program of papers and addresses which were delivered at this meeting.

At the meeting held Wednesday afternoon, March 26, the following papers were read: "Metering Conditions and Practices and Their Relation to Revenue," J. Howard Matthews, service engineer, Illinois Commerce Commission, Springfield; "A Study of the Unit Hot Air Heater; Its Possibilities as a Gas-Fired Space Heating Appliance," H. DeWitt Valentine, assistant manager heating section, People's Gas Light & Coke Co., Chicago; "The Use of Superheated Steam and Superheated Blast in a Water Gas Set," W. H. Gartley, engineer of works, the United Gas Improvement Company, Philadelphia, Pa.; "Accounting Section Activities—American Gas Association," William A. Sauer, chairman, People's Gas Light & Coke Co., Chicago; "What Is Being Accomplished by the Insurance Committee of the American Gas Association," J. G. Reese, chairman, Baltimore.

The paper read by Mr. H. DeWitt Valentine described an interesting type of gas appliance which is used to a large extent on the Pacific Coast, where, of course, climatic conditions are rather advantageous for the use of such an appliance for space heating. The heaters are very simple in construction, can be easily installed, and give excellent service. Detailed discussion of the manner in which the heater operates and the results that are obtained with it was given in this paper.

A very interesting report was read by Mr. William A. Sauer, who is the chairman of the accounting section of the American Gas Association, while Mr. J. G. Reese gave an interesting talk on what is being done by the American Gas Association in the way of gas company insurance.

In the meeting on Thursday afternoon the program was as follows: "Research Work at the University and Its Relations to the Gas Industry," Prof. S. W. Parr, University of Illinois, Urbana; "What We Are Doing in Illinois to Promote Industrial Gas Sales," F. F. Cauley, manager industrial department, People's Gas Light & Coke Co., Chicago; "Some Results Obtained with the Backrun Process in the Manufacture of Carburetted Water Gas," H. A. Kleinman, works engineer, People's Power Co., Moline; "Accident Prevention in the Gas Industry," Charles B. Scott, bureau of safety, Chicago; "Selecting the Best Fuel for Commercial Cooking," James W. Cohn, efficiency engineer, People's Gas Light & Coke Co., Chicago.

An interesting report was given by Professor Parr of the University of Chicago, showing the development that has taken place in that institution in the gas engineering field. The University of Illinois has a regular course in gas engineering covering a period of four years, which gives the student a very excellent training in the fundamentals of chemistry, physics and engineering, besides intensive training in the use of gas and its technology.

Another paper of importance was read by Mr. F. F. Cauley of the People's Gas Light & Coke Co., telling of the work being done in Chicago along industrial gas lines. Perhaps the most interesting part of his paper was the section describing the engineering course offered by the People's Gas Light & Coke Co., with a view of extending the knowledge of men in industrial gas departments as well as in others. The report clearly indicated that the People's Gas Light & Coke Co. was doing pioneer work in the industrial gas field. The paper read by Mr. H. A. Kleinman on the results obtained by the backrun process was very favorably commented on. This subject has attracted much attention during the last few months.

The last paper of the afternoon was that read by Mr. James W. Cohn on selecting the best fuel for commercial cooking. Mr. Cohn gave a very excellent comparison of the costs of electricity used for cooking purposes compared with the costs of gas. He outlined several reasons why gas was a cheaper and better fuel for commercial cooking than electricity.

New Officers of Illinois Associations

The officers of the Illinois Gas Association who were elected for the new year are as follows: President, John G. Learned, Chicago; vice-president, R. E. Chew, Bloomington; secretary-treasurer, R. V. Prather, Springfield.

The Illinois State Electric Association elected Bert H. Peck of East St. Louis for president, Paul Clayton of Springfield for vice-president and R. V. Prather of Springfield for secretary-treasurer.

The following officers were chosen for the Illinois Electric Railway Association: President, R. A. Moore, Joliet; first vice-president, J. G. Egolf, Aurora; second vice-president, C. F. Handshy, Springfield; secretary - treasurer, R. V. Prather, Springfield.

Gas Company in Panama a Vital Factor in Community

Panama, R. P.—Because of its outstanding enterprise, development, and its position of eminence in the commercial life of the community, any record of the industries of Panama would be incomplete without reference to the Panama-Colon Gas Company.

The story of the gas company is a business romance of endeavor and success. The present company is a consolidation of the Panama Gas Company and the Colon Gas Company, both organized in 1915 and incorporated in the State of Delaware, United States of America, for the purpose of supplying artificial gas to the inhabitants of the cities of Panama and Colon. In 1922 the companies were re-incorporated as one company under the laws of the Republic of Panama.

Construction work was begun in both cities during January, 1917, and gas was first turned on in July of the same year. The new fuel immediately won the favor of the public, and in the very short time that the company has been in existence, rapid work has been done in connecting up thousands of necessary house to house installations. The extent of the company's service now covers, on the Pacific side, Panama City, Ancon, Balboa, Quarry Heights, and on the Atlantic side, Colon, Cristobal, Colon Beach and Fort DeLesseps.

The company's property in the City of Panama consists of a modern complete and efficient gas plant, having a daily generating capacity of 750,000 cubic feet of gas, storage tanks having a capacity of 250,000 cubic feet of gas, oil storage tanks having a capacity of 30,000 gallons, and approximately twenty-six miles of mains and services, ranging from 12-inch to 4-inch cast iron main, and 2-inch to 1¼-inch wrought iron service lines. In the City of Colon the gas plant, equally modern and efficient, has a daily gas generating capacity of 500,000 cubic feet of gas, storage tanks with a capacity of 150,000 cubic feet of gas, oil storage tanks with a capacity of 15,000 gallons, and approximately 14 miles of mains and services, ranging from 10-inch to 4-inch cast iron mains, and 2-inch to 1¼-inch wrought iron service lines. The total property holdings represent an investment of nearly $900,000.

Fine Program Outlined for Eastern States Gas Conference

WEDNESDAY, APRIL 9

11 A. M.—Opening of Eastern States Gas Conference; address of welcome, Hon. W. Freeland Kendrick, Mayor of Philadelphia; address of the president, P. H. Gadsden, the United Gas Improvement Co., Philadelphia; address, Maj. Alexander Forward, secretary-manager, American Gas Association; report of secretary-treasurer, L. R. Dutton, Philadelphia Suburban Gas & Electric Company, Jenkintown, Pa.

12:30 to 2 P. M.—Annual meeting and luncheon of the Pennsylvania Gas Association.

2 P. M.—Paper, "Shop Practice in Expediting Work Orders," G. I. Vincent, Syracuse, (N. Y.) Lighting Co.; discussion.

4 P. M.—Paper, "Customer Billing Methods," W. N. Porter, United Gas Improvement Co., Philadelphia; discussion.

Evening—No meeting. Entertainment as desired by members.

THURSDAY, APRIL 10

10 A. M.—Paper, "Use of Bituminous Coal for Generator Fuel," W. J. Murdock, Coal Products Mfg. Co., Joliet, Ill.; discussion. Paper, "Employees' Relations with the Gas Company," Jacob B. Jones, Bridgeton (N. J.) Gas Light Co.; discussion.

12:30 to 1 P. M.—Annual meeting of the New Jersey Gas Association.

2 P. M.—Paper, "Range and Water Heater Replacements," J. Calhoun Smith, Consumers' Gas Co., Reading, Pa.; discussion. Symposium of Typical Industrial Gas Installations—Forrest W. Rawlins, Counties Gas & Electric Co., Norristown, Pa.; D. J. Harding, York (Pa.) Gas Co.; W. G. Sterrett, Phila. Suburban Gas & Elec. Co., Chester, Pa.; Elwood Greist, Lancaster (Pa.) Gas Light & Fuel Co.; Joseph B. Myers, United Gas Improvement Co., Philadelphia; H. S. Dutton, Luzerne County Gas & Elec. Co., Jenkintown, Pa.; C. H. Quackenbush, Wilmington (Del.) Gas Co.; F. P. Duggan, Penn Central Light & Power Co., Lewistown, Pa.; Jacob B. Jones, Bridgeton (N. J.) Gas Light Co.; J. P. Leinroth, Public Service Gas Co., Newark, N. J.

4 P. M.—Paper, "Service Satisfactory to Customers," Frank L. Blanchard, Henry L. Doherty & Co., New York City; discussion.

7:30 P. M.—Banquet. Toastmaster, P. M. Gadsden, president; speakers, to be announced; Madrigal singers; vaudeville, followed by dancing; surprise features.

Merger of Gas Companies in New Jersey

New York, N. Y.—A. E. Fitkin & Co., public utility managers, of 165 Broadway, announced that they had acquired the Consolidated Gas Company of New Jersey and would merge it with the Jersey Central Power & Light Corporation, also a Fitkin property. The same interests have acquired the Tri-County Electric Company of Pompton Lakes, N. J., and will merge this property with the Jersey Central Power & Light Corporation.

Announcement of these mergers followed the sale last week to a group of bankers headed by E. H. Rollins & Sons of an issue of $4,250,000 6½ per cent gold notes of the Jersey Central Power & Light Corporation. Upon completion of the mergers the Jersey Central Company becomes the second largest public utility company in New Jersey. With its constituent companies it will have a territory embracing more than 1,800 square miles and having a population of more than 328,000.

The Consolidated Gas Company of New Jersey supplies gas and electricity to the cities of Asbury Park, Long Branch, Red Bank, Allenhurst and seventeen other communities in the eastern section of New Jersey, while the Jersey Central Power & Light Corporation supplies electric light and power to Morristown, Boonton, Summit, Lakewood, Toms River and about forty additional municipalities in central New Jersey. The Tri-County Electric Company serves eight communities in the northern part of the state, including Pompton Lakes, Butler and Midvale.

Manufactured Gas Again Comes to the Aid of Natural Gas

Riverside, Cal.—During the recent storm the consumers of gas in the San Bernardino valley would have been cut off had it not been for the prompt action of the Southern California Gas Company in placing their Colton plant in service. The natural gas used here is not produced in the valley itself, but comes in through Chino, being drawn from various localities to the west.

This supply was interrupted for about two hours and for several hours more the amount being delivered was not sufficient to supply the consumers' wants. By the use of manufacturing machinery, no shortage was experienced and the gas flowed through without a break.

Change in Sales Organizations

The Robertshaw Thermostat Co., Youngwood, Pa., announce the following changes and additions in their sales organization:

The Chicago office, formerly located in the Monadnock block, is now in room 715, First National Bank building, Chicago, and Faber O'Hagan & Sons have been appointed district representatives.

R. B. Clapp & Co., Leader-News building, Cleveland, Ohio, have been appointed district representatives for northern Ohio, and William A. Blum, Mutual Home building, Dayton, Ohio, for the southern Ohio territory and vicinity.

Gas Co. Power Plant a Laboratory for Mechanical Students

Rochester, N. Y.—In line with the plan in operation at Mechanics Institute making industrial plants educational adjuncts to the institute, all electrical classes were recently transferred to the new power house of the Rochester Gas and Electric Corporation in Swan street, the instructor being E. K Huntington of the corporation.

A practical demonstration of the electrical and other machinery equipment was given. The large units were started and stopped for the benefit of the students, who were accompanied by C. F. Phillips, Mechanics Institute instructor in electricity, and W. N. Fenninger, supervisor of electrical courses.

Pacific Gas & Electric Co. to Enlarge Oakland Plant

Oakland, Cal.—Faced with an increase in use of gas unparalleled in Oakland's history, the Pacific Gas & Electric Company will make immediate additions to their plant, it was announced recently by L. H. Newbert, division manager. Cost of immediate new additions will be $29,000.

An additional compressor of 250,000 cubic feet per hour is to be installed to provide sufficient capacity in compressors for the high pressure gas distribution system.

The growth of the business during the last year indicates that the high pressure system of the local plant will send out during the peak of this season 1,250,000 cubic feet per hour.

During January, Newbert announced, there was a gain of 1,576 gas consumers, which is better than the average monthly gain for 1923, this indicating, he said, a continued growth in local population.

Illinois Power Co. Starts Building New Gas Plant

Springfield, Ill.—Beginning of construction on a new 100,000 cubic foot gas holder at the intersection of the Baltimore & Ohio Railroad tracks and West Grand avenue, as a part of the $282,000 gas plant building program, was announced recently for April 1 by General Manager A. D. Mackie, of the Illinois Power Company. The contract with the builders, the Pennsylvania Engineering Company, Newcastle, Pa., has not been signed, but specifications and plans have been agreed upon and await only the signatures of company officials.

The new tank will be given over to the storage of oil gas, and will be followed by the construction of another holder for coal gas. Figures have been prepared by utilities' engineers for construction of buildings on the West Grand avenue site which will after completion result in the transfer of the present gas works at First and Washington streets to the new site.

With the completion next year of the new plant the works will have a capacity of 6,000,000 cubic feet, or 3,000,000 cubic feet for either oil or coal gas. The company now uses about 100,000,000 gallons of oil a year in manufacturing the gas output, of which about 65 per cent is oil gas. Oil gas will be made exclusively next year upon the completion of the new plant, and coal gas will be made only at such times as the raw material for the other gas is not available.

McAlester, Okla., Gas Rates to Remain the Same

The Oklahoma Corporation Commission, in a recent order, denied the application of the McAlester Gas & Coke Co. for increased gas rates in McAlester, Featherstone, Blocker and Quinton, on the ground that the company's present earnings, based upon the valuation allowed by the commission, are sufficient to cover interest, depreciation and amortization. The commission deducts from the replacement valuation of the property, as found by engineers, $84,276.68 covering intangible items and $48,321.24 covering valuation of old artificial gas plant. After adding 20 per cent for overhead and intangible, the commission finds the present valuation of the plant to be approximately $548,454.37. Based on this valuation, which is considerably less than the valuation set by the company, the commission finds that the company's earnings for 1922 were in excess of 18%. The commission states that the average earnings for a four-year period from 1919 to 1922 amounted to more than 20 per cent upon the valuation found by the commission. The commission denies the application for an increase in rates, which leaves the present rates continuing in effect, which range from .4444 on the first 200,000 cubic feet to .15555 on all over 1,000,000 cubic feet.

Gas Schedule Approved by Public Service Commission

Albany, N. .Y—Binghamton Gas Works. Gas service supplied in city of Binghamton and villages of Johnson City and Port Dickinson, N. Y. In classification providing two charge rate for light and fuel service, commodity rate changed from 93c per 1,000 cu. ft. for all gas consumed to the following: 93c

per 1,000 cu. ft. for first 300,000 cu. ft., and 83c per 1,000 cu. ft. for all over 300,000 cu. ft. per month. Discount period changes from on or before the 10th day of month next succeeding that in which gas is consumed to—on or before the 10th day following rendition of bill. Effective April 1, 1924.

Southern Counties Gas Co. Holds Annual Meeting

Los Angeles, Cal.—At the annual meeting of the stockholders of the Southern Counties Gas Company of California, held recently in the corporation's general offices in this city, the following officers and directors were re-elected for the coming year:

Ferdinand R. Bain, president and general manager; Rufus C. Dawes, Chicago, vice-president; A. S. Bradford, vice - president; Charles H. Dickey, New York City, vice-president; Walter S. McFarland, secretary; F. H. Dudley, treasurer; Leroy M. Edwards, counsel; F. S. Wade, superintendent of operations; M. R. Thompson, engineer; A. F. Bridge, rate engineer, and the following directors: John H. Bartle, Monrovia; F. W. Hadley, Whittier; C. M. Stone, Pomona; W. B. Williams, Santa Ana, and George A. McCrea, Ontario, elected to replace P. E. Hatch of Long Beach, resigned.

It was pointed out at the annual meeting by President Bain that the company had enjoyed a period of great activity throughout the territory served. According to the executive, the Southern Counties organization now distributes gas in 56 cities and communities of Southern California in Los Angeles, Orange, San Bernardino, Ventura and Santa Barbara counties.

"During the year 1923," said Mr. Bain, "our company expended $3,313,622 on new extensions, improvements and betterments to our system. Among the chief improvements of the year was the new natural gas line to Santa Barbara, the laying of 15 miles of transmission main from Orange to San Bernardino county, extending our system to give natural gas service to Puente, together with a long list of miscellaneous improvements.

"During the year we added 18,940 new consumers on our system, bringing a grand total, as of December 31, 1923, to 119,545. During the same period we sold thirteen and one-half billion cubic feet of gas, an increase of 278 per cent over the amount sold during 1918."

According to company officials, the utility's construction program during 1923 was very extensive and at the same time it was pointed out that undoubtedly an equally large construction program will be inaugurated during 1924. It was said that the general increase in business throughout the territory served by the company during the year was gratifying, particularly along the line of domestic consumers. It was shown that the company today serves a population of approximately half a million people and that the demands for service required the operations of all units to their fullest capacity.

Bain stressed the point that today there is available a greater supply of natural gas than at any period during the company's history.

During the evening of the day of the annual meeting Bain was host to 130 officials, guests and company employees at the annual banquet held at the Biltmore Hotel. The president officiated as host but turned the meeting over to Counsel LeRoy Edwards, who acted as toastmaster. Among the speakers were Judge Robert L. Clark, W. G. Rich of Whittier, F. H. Bivens of Long Beach, Charles H. Dickey of New York City and others.

Illinois Co. Orders New Equipment

Cleveland, O.—The Gas Machinery Company of Cleveland, Ohio, has been awarded contract by the Illinois Power & Light Corporation, for a new six-foot carburetted water gas apparatus to be erected in the gas plant at LaSalle, Illinois.

The contract includes reverse steam connections, hydraulically operated stack valve, air and steam meters, explosion check valve, fuel buggy with hopper, overhead operating floor and auxiliary equipment.

The new six-foot set will be located in one end of the old retort house.

Program of Annual Convention Southwestern Public Service Association

GENERAL SESSIONS

Tuesday, April 22

Addresses by Wm. Pfaff, president Association of Commerce, New Orleans; J. F. Owens, vice-president and general manager Oklahoma Gas and Electric Company, Oklahoma City; "Prone Pressure Method of Resuscitation," Samuel H. Reid, Bureau of Safety, Chicago.

Wednesday Afternoon, April 23
(In charge Technical Committee)

Papers—"Maintenance and Repairs of Domestic Meters," T. P. Walker, manager Baton Rouge Electric Company; "Rate Structure for Selling Gas," F. J. Schwab, New Orleans Public Service, Inc.; "Results of Research and Practical Demonstration and Tests in Welding Cast Iron Pipe Joints," H. Y. Carsons, research manager American Cast Iron Pipe Company.

Thursday Morning, April 24

Addresses—"National Association and Public Relations," W. H. Johnson, vice-president Philadelphia Electric Company, president N. E. L. A.; "Employee Training for Better Public Relations," S. M. Kennedy, vice-president Southern California Edison Company, Los Angeles; "A Giant Awakened," Alexander Forward, secretary-manager American Gas Association, New York.

Thursday Afternoon, April 24
(Charge Commercial Committee)

Discussions and Papers—"Testing Gas Appliances for Approval," led by H. C. Morris, Dallas Gas Company, Dallas; "Increasing Gas Sales," led by H. E. Danner, Houston Gas & Fuel Company, C. H. Seidenglanz, Ruud - Humphrey Heater Company, Dallas, and others; "How Can the Manufacturer Assist the Gas Company?" F. A. Lemke, the Humphrey Company.

Friday, April 25

Address—"Building in the Public Mind the True Conception of Utilities," E. F. Wickwire, vice-president Ohio Brass Company, Mansfield, Ohio.

Friday Morning, April 25
(Charge Accounting Committee)
Papers—"Uniform System of Accounting," R. G. Soper, Dallas Gas Company, Dallas; "Meter Deposits, Collections and Cut-offs," C. K. Fletcher, Ft. Worth Gas Company.

Files Certificate of Incorporation

The Mueller Co. of Decatur, Ill., has filed a certificate in the office of the Secretary of State at Albany, N. Y., entering New York State, and designating 145-149 W. 30th street, New York City, as its principal place of business in this state. The corporation is capitalized at $680,000 and manufactures water and gas supplies.

New Coke Ovens Begin Operation

The new by-product coke and gas plant of the Hamilton By-products Coke Ovens, Ltd., Hamilton, Ont., was officially opened last month by Charles Stewart, Minister of the Interior and of Mines. Dr. Charles Camsell, chairman of the dominion fuel board, and a number of other government and company officials attended.

The occasion was of special interest as a test was made on a commercial scale to determine the coking qualities of several carloads of soft coal from New Brunswick and Nova Scotia. The coke produced apparently has a high carbon content, equal to high-grade anthracite.

The plant is the first of its type erected in Canada and represents an investment of $4,000,000. It was designed and built by the Semet-Solvay Company. At ordinary speed it will carbonize 325 tons of coal daily with a production of about 230 tons of coke and 2,000,000 cubic feet of gas. At the maximum speed of operation it will cubic feet of gas. The city of carbonize 550 tons of coal daily with an output of over 5,500,000 Hamilton will be supplied with gas.

Iowa Gas Men Will Meet

Sioux City, Iowa—Gas men who attend the annual convention of the Iowa District Gas Association here April 16, 17 and 18, will be told how they can do their bookkeeping without books. In view of the fact that gas companies are forced to carry more small individual accounts than almost any other business, this paradoxical paper is receiving unusual attention. Mr. George F. Myers of Sioux City will explain the system. It is purported to be an adaptation of the card index principle.

Many other prominent speakers have accepted invitations to speak at the convention. They include: J. M. Williamson, Waterloo; L. O. Gordon, Albert Lea, Minn; B. F. Pelton, St. Paul, Minn., and N. T. Sellman of New York.

New Holder for Millville

Millville, N. J.—The Cumberland County Gas Company, whose works and general offices are located in this city, has awarded the contract for an additional gas holder of one million and a half cubic feet capacity. The holder will be 145 feet in diameter and 143 feet in height. Other extensive improvements are also contemplated at the plant. This company now has about 200 miles of mains and is planning several more extensions in the southern New Jersey territory. S. J. Franklin, general manager of the company, is a live wire in the gas industry and was formerly president of the New Jersey State Gas Association.

Legislation Introduced at Albany

Albany, N. Y.—Senate Print No. 1593 by Mr. Rabenold. Amends Section 68, Public Service Commission Law, by striking out provision that no municipality shall operate for other than municipal purposes any works for supplying gas or electricity for lighting without certificate of authority from Public Service Commission. This would enable cities to go into business of operating municipally owned gas and electric plants to supply the public with service in competition with private capital.

Assembly Print No. 1925 by Mr. Steinberg (Republican) from New York City. Adds new Section 23—a General City Law, providing no city shall pass or enforce any existing ordinance requiring real property to install or maintain at own expense a gas shut-off.

N. J. Gas Association Holds Sectional Meeting

The first sectional meeting of the N. J. Gas Association was held in Bridgeton on March 12. About forty men attended this meeting, among whom were representatives from Bridgeton, Salem, Atlantic City, Millville, Vineland, Glassboro and Pitman. Of the committee, Mr. G. C. Shadwell, F. A. Tuttle, W. H. Grim and J. P. Leinroth, chairman, were present.

The meeting was very informal, the idea being to have as general a discussion on industrial gas as possible, with special emphasis on how to go after this business.

J. P. Leinroth, of the Public Service Gas Company, explained briefly the work the committee was trying to do in acting as a clearing house for information on industrial gas and in trying to help the various companies in the association to get this business. He also outlined the methods used in getting the industrial load as used by the Public Service Gas Company.

Mr. G. C. Shadwell, of the Combustion Utilities Corporation, followed with a discussion of the methods used by the various H. L. Doherty companies.

F. A. Tuttle, of the Public Service Gas Company, sketched briefly the progress in the industrial applications of gas and contrasted conditions in the appliance field twenty years ago with today.

The morning session was concluded and all attending went to the Library Annex, where an excellent baked ham luncheon was served.

After lunch, the meeting was resumed with an open discussion. Those responding were C. A. Hoy and W. A. Norris of Glassboro, L. O. Greiner and L. H. Yetter of Atlantic City, Ralph Lee of Vineland, C. J. Wilson of Pitman, R. H. Jenkins of Salem, and W. H. Grim and J. B. Jones of Bridgeton.

The meeting was a most enthusiastic gathering and distinctly encouraging to all members of the committee. This method of holding committee meetings in different sections of the state is a most effective means of carrying on the work of the association.